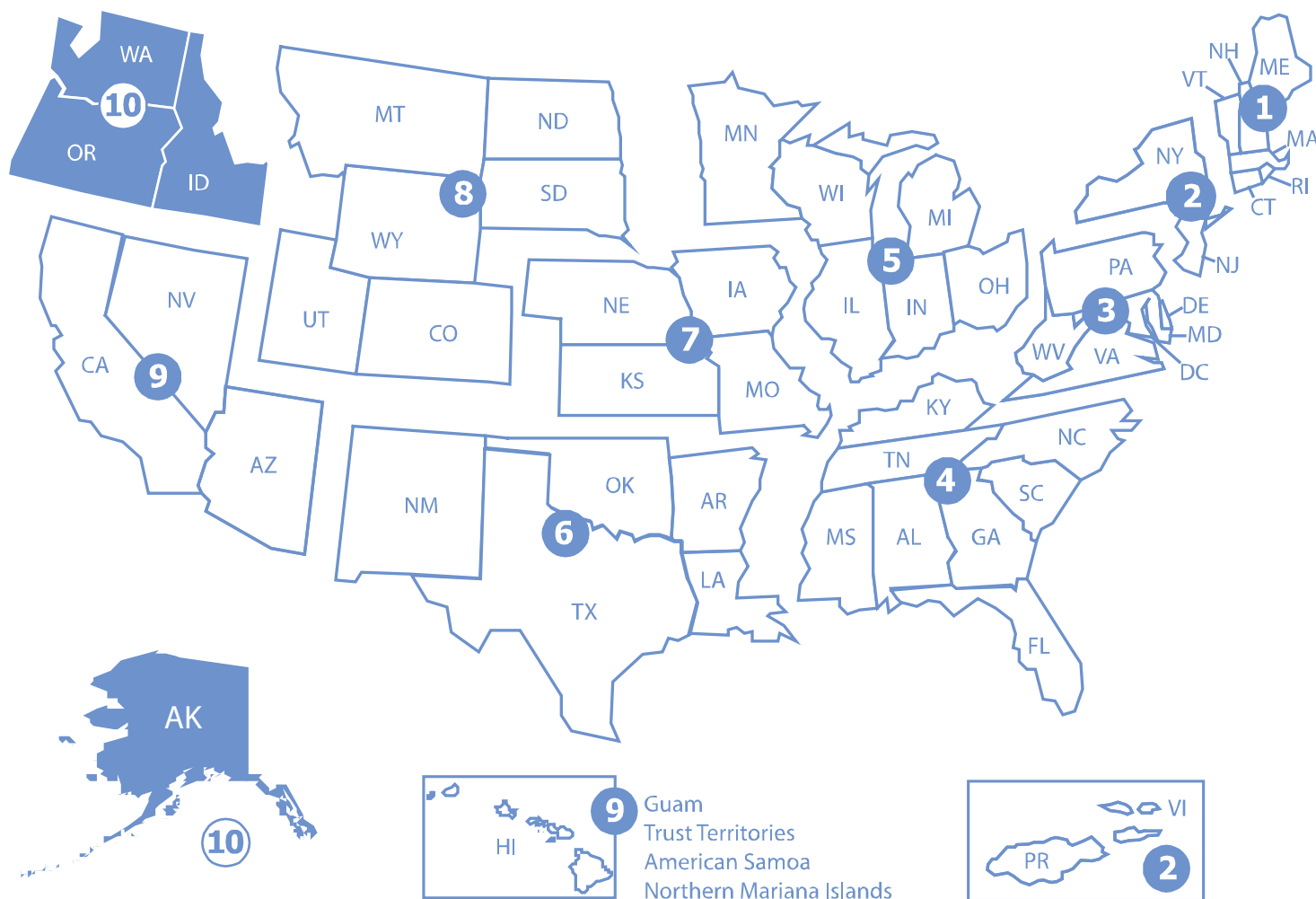




Support Document for the Revised National Priorities List Final Rule – Grain Handling Facility at Freeman



**Support Document for the
Revised National Priorities List
Final Rule
Grain Handling Facility at Freeman
September 2015**

**Site Assessment and Remedy Decisions Branch
Office of Superfund Remediation and Technology Innovation
Office of Solid Waste and Emergency Response
U.S. Environmental Protection Agency
Washington, DC 20460**

**Grain Handling Facility at Freeman
Response to Comments
Final Draft September 2015**

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Attachment 1: Excerpt of 2013 Ecology and Environment, Inc. Quality Management Plan Superfund Technical Assessment and Response

Executive Summary

Section 105(a)(8)(B) of CERCLA, as amended by SARA, requires that EPA prepare a list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States. An original National Priorities List was promulgated on September 8, 1983 (48 FR 40658). CERCLA requires that EPA update the list at least annually.

This document provides responses to public comments received on the Grain Handling Facility at Freeman site, proposed on March 26, 2015 (80 FR 15972). This site is being added to the NPL based on an evaluation under EPA's Hazard Ranking System (HRS) in a final rule published in the *Federal Register* in September 2015.

Introduction

This document explains the rationale for adding the Grain Handling Facility at Freeman site in Freeman, Washington to the National Priorities List (NPL) of uncontrolled hazardous waste sites and provides responses to public comments received on this site listing proposal. The U.S. Environmental Protection Agency (EPA) proposed this site to the NPL on March 26, 2015 (80 FR 15972). This site is being added to the NPL based on an evaluation under the Hazard Ranking System in a final rule published in the *Federal Register* in September 2015.

Background of the NPL

In 1980, Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. Sections 9601 *et seq.* in response to the dangers of uncontrolled hazardous waste sites. CERCLA was amended on October 17, 1986, by the Superfund Amendments and Reauthorization Act (SARA), Public Law No. 99-499, stat., 1613 *et seq.* To implement CERCLA, EPA promulgated the revised National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300, on July 16, 1982 (47 FR 31180), pursuant to CERCLA Section 105 and Executive Order 12316 (46 FR 42237, August 20, 1981). The NCP, further revised by EPA on September 16, 1985 (50 FR 37624) and November 20, 1985 (50 FR 47912), sets forth guidelines and procedures needed to respond under CERCLA to releases and threatened releases of hazardous substances, pollutants, or contaminants. On March 8, 1990 (55 FR 8666), EPA further revised the NCP in response to SARA.

Section 105(a)(8)(A) of CERCLA, as amended by SARA, requires that the NCP include

criteria for determining priorities among releases or threatened releases throughout the United States for the purpose of taking remedial action and, to the extent practicable, take into account the potential urgency of such action, for the purpose of taking removal action.

Removal action involves cleanup or other actions that are taken in response to emergency conditions or on a short-term or temporary basis (CERCLA Section 101). Remedial action is generally long-term in nature and involves response actions that are consistent with a permanent remedy for a release (CERCLA Section 101). Criteria for placing sites on the NPL, which makes them eligible for remedial actions financed by the Trust Fund established under CERCLA, were included in the HRS. EPA promulgated the HRS as Appendix A of the NCP (47 FR 31219, July 16, 1982). On December 14, 1990 (56 FR 51532), EPA promulgated revisions to the HRS in response to SARA, and established the effective date for the HRS revisions as March 15, 1991.

Section 105(a)(8)(B) of CERCLA, as amended, requires that the statutory criteria provided by the HRS be used to prepare a list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States. The list, which is Appendix B of the NCP, is the NPL.

An original NPL of 406 sites was promulgated on September 8, 1983 (48 FR 40658). At that time, an HRS score of 28.5 was established as the cutoff for listing because it yielded an initial NPL of at least 400 sites, as suggested by CERCLA. The NPL has been expanded several times since then, most recently on March 26, 2015 (80 FR 15901). The Agency also has published a number of proposed rulemakings to add sites to the NPL. The most recent proposal was on March 26, 2015 (80 FR 15972).

Development of the NPL

The primary purpose of the NPL is stated in the legislative history of CERCLA (Report of the Committee on Environment and Public Works, Senate Report No. 96-848, 96th Cong., 2d Sess. 60 [1980]).

The priority list serves primarily informational purposes, identifying for the States and the public those facilities and sites or other releases which appear to warrant remedial actions. Inclusion of a facility or site on the list does not in itself reflect a judgment of the activities of its owner or operator, it does not require those persons to undertake any action, nor does it assign liability to any person. Subsequent government actions will be necessary in order to do so, and these actions will be attended by all appropriate procedural safeguards.

The NPL, therefore, is primarily an informational and management tool. The identification of a site for the NPL is intended primarily to guide EPA in determining which sites warrant further investigation to assess the nature and extent of the human health and environmental risks associated with the site and to determine what CERCLA-financed remedial action(s), if any, may be appropriate. The NPL also serves to notify the public of sites EPA believes warrant further investigation. Finally, listing a site may, to the extent potentially responsible parties are identifiable at the time of listing, serve as notice to such parties that the Agency may initiate CERCLA-financed remedial action.

CERCLA Section 105(a)(8)(B) directs EPA to list priority sites among the known releases or threatened release of hazardous substances, pollutants, or contaminants, and Section 105(a)(8)(A) directs EPA to consider certain enumerated and other appropriate factors in doing so. Thus, as a matter of policy, EPA has the discretion not to use CERCLA to respond to certain types of releases. Where other authorities exist, placing sites on the NPL for possible remedial action under CERCLA may not be appropriate. Therefore, EPA has chosen not to place certain types of sites on the NPL even though CERCLA does not exclude such action. If, however, the Agency later determines that sites not listed as a matter of policy are not being properly responded to, the Agency may consider placing them on the NPL.

Hazard Ranking System

The HRS is the principle mechanism EPA uses to place uncontrolled waste sites on the NPL. It is a numerically based screening system that uses information from initial, limited investigations -- the preliminary assessment and site inspection -- to assess the relative potential of sites to pose a threat to human health or the environment. HRS scores, however, do not determine the sequence in which EPA funds remedial response actions, because the information collected to develop HRS scores is not sufficient in itself to determine either the extent of contamination or the appropriate response for a particular site. Moreover, the sites with the highest scores do not necessarily come to the Agency's attention first, so that addressing sites strictly on the basis of ranking would in some cases require stopping work at sites where it was already underway. Thus, EPA relies on further, more detailed studies in the remedial investigation/feasibility study that typically follows listing.

The HRS uses a structured value analysis approach to scoring sites. This approach assigns numerical values to factors that relate to or indicate risk, based on conditions at the site. The factors are grouped into three categories. Each category has a maximum value. The categories are:

- likelihood that a site has released or has the potential to release hazardous substances into the environment;
- characteristics of the waste (toxicity and waste quantity); and
- people or sensitive environments (targets) affected by the release.

Under the HRS, four pathways can be scored for one or more threats as identified below:

- Ground Water Migration (S_{gw})
- drinking water

- Surface Water Migration (S_{sw})
The following threats are evaluated for two separate migration components, overland/flood migration and ground water to surface water.
 - drinking water
 - human food chain
 - sensitive environments
- Soil Exposure (S_s)
 - resident population
 - nearby population
 - sensitive environments
- Air Migration (S_a)
 - population
 - sensitive environments

After scores are calculated for one or more pathways according to prescribed guidelines, they are combined using the following root-mean-square equation to determine the overall site score (S), which ranges from 0 to 100:

$$S = \sqrt{\frac{S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2}{4}}$$

If all pathway scores are low, the HRS score is low. However, the HRS score can be relatively high even if only one pathway score is high. This is an important requirement for HRS scoring because some extremely dangerous sites pose threats through only one pathway. For example, buried leaking drums of hazardous substances can contaminate drinking water wells, but not surface water or air if the drums are buried deep enough and the substances are not very volatile.

Other Mechanisms for Listing

There are two mechanisms other than the HRS by which sites can be placed on the NPL. The first of these mechanisms, authorized by the NCP at 40 CFR 300.425(c)(2), allows each State and Territory to designate one site as its highest priority regardless of score. The last mechanism, authorized by the NCP at 40 CFR 300.425(c)(3), allows listing a site if it meets the following three requirements:

- Agency for Toxic Substances and Disease Registry (ATSDR) of the U.S. Public Health Service has issued a health advisory that recommends dissociation of individuals from the release;
- EPA determines the site poses a significant threat to public health; and
- EPA anticipates it will be more cost-effective to use its remedial authority than to use its emergency removal authority to respond to the site.

Organization of this Document

The following section contains EPA responses to site-specific public comments received on the proposal of the Grain Handling Facility at Freeman site on March 26, 2015 (80 FR 15972). The site discussion begins with a list of commenters, followed by a site description, a summary of comments, and Agency responses to each comment. A concluding statement indicates the effect of the comments on the HRS score for the site.

Glossary

The following acronyms and abbreviations are used throughout the text:

Agency	U.S. Environmental Protection Agency
AMSL	Above mean sea level
ATSDR	Agency for Toxic Substances and Disease Registry
BGS	Below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. Sections 9601 <i>et seq.</i> , also known as Superfund
CFR	Code of Federal Regulations
CHS	CHS Inc.
CLP	EPA Contract Laboratory Program
CRQL	Contract-required quantitation limit
DQO	Data Quality Objectives Process for Superfund Interim Final Guidance
E & E	Ecology and Environment, Inc.
EPA	U.S. Environmental Protection Agency
FR	Federal Register
FS	Feasibility study
HRS	Hazard Ranking System, Appendix A of the NCP
HRS score	Overall site score calculated using the Hazard Ranking System; ranges from 0 to 100
MCL	Maximum contaminant level
MDL	Method detection limit
Mutual Materials	Mutual Materials Company
µg/kg	Microgram per kilogram
µg/l	Microgram per liter
NCP	National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300
NPL	National Priorities List, Appendix B of the NCP
PA	Preliminary Assessment
PSC	Petroleum Contaminated Soil
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QMP	Quality Management Plan
RI	Remedial investigation

SAP	Sampling Analysis Plan
SARA	Superfund Amendments and Reauthorization Act
SI	Site inspection
SOW	Statement of work
START	Superfund Technical Assessment Response Team
SQAP	Sampling and Quality Assurance Plan
UST	Underground storage tanks
VOC	Volatile organic compounds

Grain Handling Facility at Freeman Response to Comments Final Draft September 2015

1. List of Commenters and Correspondence

EPA-HQ-SFUND-2015-0141-0005	Correspondence, dated January 8, 2015, from the Honorable Jay Inslee, Governor of the State of Washington to Dennis McLerran, Regional Administrator, U.S. EPA Region 10.
EPA-HQ-SFUND-2015-0141-0006	Comment, received March 26, 2015, from anonymous.
EPA-HQ-SFUND-2015-0141-0010	Correspondence, dated April 2, 2015, from Terry Jeng, OSWER/OSRTI/ARD/SARDB.
EPA-HQ-SFUND-2014-0141-0011	Comment, dated April 22, 2015, from Gary Pettibone.
EPA-HQ-SFUND-2014-0141-0012	Comment, dated May 6, 2015, from Donya Williamson Burns, Houlihan Law on behalf of Mutual Materials Company.
EPA-HQ-SFUND-2014-0141-0013	Comment, dated May 15, 2015, from Paul C. Grabau, Principal Hydrogeologist and Peter Jewett, Principal Engineering Geologist, Farallon Consulting, L.L.C. on behalf of CHS Inc.

2. Site Description

The Grain Handling Facility at Freeman site (the Site) is located in Spokane County, Washington. The Site consists of carbon tetrachloride and chloroform, a degradation product of carbon tetrachloride, contaminated subsurface soil at the Grain Handling Facility at Freeman and the contaminated ground water plume emanating from it. Analytical results indicate the presence of carbon tetrachloride and chloroform in subsurface soil samples taken to the south/southwest of the grain silos located on the Grain Handling Facility at Freeman property. The area of contaminated soil indicates that the volume of contaminated soil is approximately 1,345 cubic yards. A release of these hazardous substances (carbon tetrachloride and chloroform) to the local drinking water aquifer has been documented. The Freeman School District's Primary drinking water supply well, located southwest and downgradient of the contaminated soil source, is contaminated above health-based criteria including the Federal maximum contaminant level (MCL) for drinking water. (See Ref. 4, p. 63 (Figure 2-3) of the Hazard Ranking System (HRS) documentation record at proposal).

The Site area is generally underlain by a minimum of two aquifer systems. Subsurface information suggests that, in general, a surficial loess layer extends from topsoil to the basalt and ranges in thickness from a few feet to about 100 feet thick. At the Freeman School District Production Well (i.e., Primary Drinking Water Supply Well), the loess surficial layer is approximately 50 feet thick and the basalt layer is about 145 feet thick.

Five wells in the vicinity of the Site have been sampled. These include the Freeman School District's primary drinking water supply well, the out-of-use Freeman School District well (well W26), a former domestic well located in the southeast portion of the Freeman School District campus (well W20), a private well located southeast of the campus (well W30), and the Freeman Store well. (See Ref. 4, p. 63 (Figure 2-3) of the HRS documentation record at proposal). The Freeman School District's primary drinking water supply well and well W20 contained detectable concentrations of volatile organic compounds (VOCs). Carbon tetrachloride was present in these wells at 22.0 µg/l (Freeman School District's primary drinking water well) and 21.2 µg/l (Well W20). Additionally, chloroform was present in these two wells at 1.28 and 2.04 µg/l, respectively.

As part of the effort to identify the source of the carbon tetrachloride and chloroform release (both of which are man-made and do not occur naturally in the environment), EPA and the State of Washington evaluated possible sources in the area. The area surrounding the site is rural and sparsely populated. The HRS documentation record at proposal identified the Grain Handling Facility at Freeman and the Old Freeman Clay Pit as the two potential sources of contamination located upgradient of the Freeman School District out-of-use well (W26). Three upgradient soil borings (HA01, HA02, and HA03) were collected from between an area of ponded water located on the southwest portion of the Old Freeman Clay Pit property (located northeast from the Grain Handling Facility grain silos) and the Grain Handling Facility. No VOCs, including carbon tetrachloride and chloroform, were detected in these samples, suggesting that neither carbon tetrachloride nor chloroform are migrating from the Old Freeman Clay Pit property.

The Grain Handling Facility at Freeman began operation in 1955. The current facility contains steel storage structures and grain transfer equipment. The current facility operator stated that no documents were located to indicate that carbon tetrachloride was ever used at this facility. Although no documentation of historical use of carbon tetrachloride was located, it is conceivable that carbon tetrachloride was used as a fumigant at this location because carbon tetrachloride was widely used for pest control purposes beginning in 1911 and continuing until 1986.

As set forth in this support document, EPA detected carbon tetrachloride and chloroform contamination in the wells surrounding the Freeman School District campus that is located downgradient of the Grain Handling Facility. Based on an evaluation of other potential sources and background samples taken upgradient of the Grain Handling Facility, EPA has not identified another potential source of contamination at this time. The information presented in the HRS documentation package supports EPA's assertion that the carbon tetrachloride and chloroform contamination at the site is attributable, at least in part, to the contaminated soil at the Grain Handling facility.



Figure 1– Topographic map of the Grain Handling Facility at Freeman site.

3. Summary of Comments

The Honorable Jay Inslee, Governor of the State of Washington, and the Mutual Materials Company (Mutual Materials) expressed its support for listing the Site on the NPL. Mutual Materials commented that it agreed that the proposed listing sufficiently encompassed the scope of contamination.

One anonymous commenter requested an extension of the comment period to allow time for review of docket materials not available online at the time of publication in the Federal Register.

Mutual Materials commented that the Site boundaries should not be expanded. Mutual Materials asserted that evidence was not available to support the inclusion of its property within the Site boundaries.

Comments were submitted in opposition to placing the Site on the NPL by CHS Inc. (CHS) and local citizen, Mr. Gary Pettibone. Mr. Pettibone submitted comments on the reference material supporting the proposed listing of the Site on the NPL. CHS alleged a citation error was present in a reference document.

Mr. Pettibone questioned the identification and documentation of quality control measures implemented. Mr. Pettibone commented that insufficient information was available in the Site Inspection (SI) report to determine the relevant qualifications of samplers.

Mr. Pettibone and CHS questioned the association of carbon tetrachloride with the soil source, commenting:

- Carbon tetrachloride was detected in only a few samples.
- Many sample results were estimates.
- Sampling was biased towards the grain handling facility as a source.
- Appropriate soil background conditions were not established.
- Background and source samples were dissimilar with regard to moisture content and sample collection depths.

CHS and Mr. Pettibone questioned the attribution of carbon tetrachloride to the soil source, asserting:

- Insufficient information or data were in the SI report to conclusively support the grain facility as the source of contamination.
- Available soil and ground water data were insufficient to attribute ground water contamination to the soil source.
- Well W26 may be acting as a conduit for contaminant transport from shallow to deeper ground water.
- Other possible sources, including a dump, have not been appropriately investigated. Insufficient information is available to determine ground water flow direction to support attribution to the soil source.

Mr. Pettibone's comments questioned the validity of the SI report. Mr. Pettibone commented that the SI report was not appropriate for use to support the placement of the Site on the NPL because it contained conjecture.

3.1 Support for Listing

Comment: Two commenters submitted comments stating they support the proposed listing of the Site on the NPL. The Honorable Jay Inslee, Governor of Washington state, expressed his support for the placement of the Site on the NPL. Mutual Materials Company (Mutual Materials) commented that it agrees that the proposed listing of the Site adequately encompasses the source and scope of the carbon tetrachloride contaminating ground water at down gradient properties.

Response: EPA is adding the Freeman Grain Handling site to the NPL. Listing makes a site eligible for remedial action funding under CERCLA, and EPA will examine the site to determine what response, if any, is appropriate. However, actual funding may not necessarily be provided in the precise order of HRS score. In some cases, more detailed investigations may indicate that remedial action funding under CERCLA is not necessary at all. EPA will determine the need for using Superfund monies for remedial activities on a site-by-site basis, taking into account the NPL ranking, State priorities, further site investigation, other response alternatives, and other appropriate factors.

3.2 Request to Extend Comment Period

Comment: An anonymous commenter stated that “[s]upporting information for docket EPA-HQ-SFUND-2015-0139” was not posted online at the time of the *Federal Register* publication of the notice of the proposed rulemaking. The commenter cited the docket number for a different site also being proposed for the NPL in the same *Federal Register* notice. This person suggested that the comment period should be extended for the length of time that lapsed between posting supporting documents and the *Federal Register* publication date.

Response: EPA posted the supporting information on the Site docket, located at Regulations.gov, on April 1, 2015, and granted a 7-day extension to the comment period for both this Site and the site for which the docket number was given by the commenter. This extension was documented in a memorandum to the docket from Terry Jeng, Site Assessment & Remedy Decisions Branch, dated April 2, 2015 (docket ID EPA-HQ-SFUND-2015-0141-0010).

3.3 Extent of Site

Comment: Mutual Materials commented that the Site boundaries should not be expanded because no evidence exists indicating its property (“Spokane County parcel number 43012.9005”) contributed to Site contamination. Mutual Materials submitted a figure attached as Exhibit 1 to its comment submission, which pointed to the grain facility as the “Proposed NPL Site.” Mutual Materials commented that the geographic boundary of the proposed Site should not be expanded. Mutual Materials asserted that no evidence was present to support the expansion of the Site boundaries to include the Mutual Materials property.

Response: The extent of the Site for HRS scoring purposes has been appropriately delineated in the HRS documentation record at proposal to include the soil source of contamination located in the soil at the grain facility property and the chlorinate solvents located in ground water wells at the Freeman School District Complex. These areas represent one or more locations considered to be part of the Site based on the screening information EPA used to evaluate the Site for NPL listing. Mutual Materials confuses the Site boundaries as being the same as the grain facility property boundaries. The extent of the Site, as delineated in the HRS documentation record at proposal, does not necessarily represent the final Site dimensions. As explained below, at the listing stage of the Superfund process, CERCLA and the HRS do not require precise boundaries be established. Placing a site on the NPL is based on an evaluation, in accordance with the HRS, of a release or threatened release of hazardous substances, pollutants, or contaminants. However, the fact that EPA initially identifies and lists the release based on a review of contamination at a certain parcel of property does not necessarily mean that the site boundaries are limited to that parcel.

CERCLA Section 105(a)(8)(A) requires EPA to list national priorities among the known “releases or threatened releases” of hazardous substances; thus, the focus is on the release, not precisely delineated boundaries. 42 U.S.C. 9601. Furthermore, CERCLA Section 101(a) defines a “facility” as the “site” where a hazardous substance has been “deposited, stored, placed, or has otherwise come to be located.” The “come to be located” language gives EPA broad authority to clean up contamination when it has spread from the original source.

On March 31, 1989, EPA stated:

HRS scoring and the subsequent listing of a release merely represent the initial determination that a certain area may need to be addressed under CERCLA. Accordingly, EPA contemplates that the preliminary description of facility boundaries at the time of scoring will need to be refined and improved as more information is developed as to where the contamination has come to be located; this refining step generally comes during the RI/FS [remedial investigation/feasibility study] stage. 54 FR 13298

The revised HRS Section 1.1, *Definitions* elaborates on the “come to be located” language, defining “site” as “[a]rea(s) where a hazardous substance has been deposited, stored, disposed, or placed, or has otherwise come to be located. Such areas may include multiple sources and may include the area between sources.” 55 FR 51587, December 14, 1990.

Until the site investigation process has been completed and a remedial action (if any) selected, EPA can neither estimate the extent of contamination at the NPL site, nor describe the ultimate dimensions of the site. Even during a remedial action (e.g., the removal of buried waste) EPA may find that the contamination has spread further than previously estimated, and the extent of the release may be revised. In addition, if another, unrelated area of contamination is discovered elsewhere on the property, EPA may decide to evaluate that release for the NPL.

Whether or not the Mutual Materials property will be included as part of the Site in the future will depend on whether any future investigation finds the Mutual Materials property is part of the release from the Site, or has come to be contaminated due to the release from the Site.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.4 Reference Material

Comment: CHS Inc. (CHS) commented that the Ecology Status Report¹ in discussion of well W26 incorrectly cited to the well log for well W20.

Response: The Ecology Status Report (the full title of the document is: *Freeman School Wells Contaminated Ground Water Status Report*) (Reference 13 to the HRS documentation record at proposal) (hereinafter referred to as the Ecology Status Report) did not provide a citation to the well log for well W20 in discussion of well W26. Nor did any part of the HRS evaluation of the Site rely on the well log citation in this document.

Page 2 of Reference 13 of the HRS documentation record at proposal, the Ecology Status Report, discusses well W26 (i.e., Marlow well), stating:

The Marlow well (log attached) is located on a former residential property acquired by the school district for the recent campus expansion program. The Marlow house and out-buildings were demolished; however the water well was preserved as a possible supplemental water supply for the school . . . The Marlow well is approximately ¼ mile north of the School District well; the Marlow well head being about 25 feet higher in elevation.

¹ CHS cited the *Freeman School Wells Contaminated Ground Water Status Report* dated August 16, 2012, prepared by Ecology (referred to as the Ecology Status Report by CHS). The *Freeman School Wells Contaminated Ground Water Status Report* is Reference 13 to the HRS documentation record at proposal (hereinafter Ecology Status Report).

Well logs are not included as an attachment to the excerpt of Reference 13 of the HRS documentation record at proposal. The Ecology Status Report appropriately identifies well W26 as the Marlow well and does not indicate a reference to well W20. Hence, a citation to the wrong well log for W26 is not present in the Ecology Status Report, as provided in the docket materials.

Reference 12 of the HRS documentation record at proposal is the March 2013 Feasibility Evaluation completed by GeoEngineers and contains the well log for well W26, which is provided as a reference to the sample information for sample DW01GW. Page 60 of Reference 12, cited in the HRS documentation record at proposal, identifies that this well is labeled “W26” and is located at “Lot 2 Block 6 Freeman 1st addition.” This reference properly identifies the well log for W26.

Additionally, the HRS documentation record at proposal correctly cites the appropriate well log for well W26. Page 9 of the HRS documentation record at proposal indicates that well W26 is also referred to as “the out-of-use Freeman School District well (well W26).” Page 9 of the HRS documentation record at proposal also indicates that another name for the well is “the Marlow well (referred to throughout the remainder of this document as the Freeman School District out-of-use well).” Page 31 of the HRS documentation record at proposal states that, “[s]ample DW01GW was collected from the district’s out-of-use well.” Table 7 on page 34 of the HRS documentation record at proposal provides information regarding well W26 sample DW01GW and cites page 60 of Reference 12:

Table 7 – Release Ground Water Well Characteristics

Sample ID	Screened Interval (feet bgs)	Well Depth (feet bgs)	Date	References
DW01GW 14164003 JGFG2	No Screen	140	4/22/2014	Ref. 4, p. 73; Ref. 6, p. 11; Ref. 12, p. 60
DW02GW 14164005 JGFG4	No Screen	215	4/22/2014	Ref. 4, p. 73; Ref. 6, p. 12; Ref. 12, p. 41
Key: bgs = below ground surface. ID = Identification.				

This comment results in no change to the HRS score and no change in the decision to list the Site on the NPL.

3.5 Quality Assurance

Comment: Gary Pettibone (Mr. Pettibone) submitted several comments questioning the quality control measures implemented for the site inspection (SI) sampling of the Freeman School District Well including:

- Identifying personnel that conducted sampling;
- Indicating whether personnel were trained in sampling methods.

Response: The information and data from the SI (Reference 4 of the HRS documentation record at proposal) used in the HRS evaluation of the Site were collected in accordance with appropriate quality control and quality assurance measures. Specifically, quality assurance procedures were sufficiently implemented and identified for field-related SI activities, including personnel identification and qualifications of personnel, that were used in

support of the HRS evaluation of the Site, as outlined in the Freeman Ground Water Contamination Sampling and Quality Assurance Plan (SQAP)² developed for the SI.

Although the HRS does not provide specific requirements for quality assurance of field activities used to support an HRS evaluation, the SI data was collected using appropriate quality assurance and quality control measures that are outlined in the SQAP. Page 13 of SI report (Reference 4 of the HRS documentation record at proposal) identifies the personnel completing the SI, stating:

Ecology and Environment, Inc. (E & E) was tasked by the United States Environmental Protection Agency (EPA) to provide technical support for completion of a Site Inspection (SI) at the Freeman Ground Water Contamination site in Freeman, Washington.

Page 29 of the SI report further elaborates on quality assurance measures related to field activities (e.g., sampling):

A sampling and quality assurance plan (SQAP) for the Freeman Ground Water Contamination SI was developed by the START [Superfund Technical Assessment Response Team] prior to field sampling (E & E 2014b). The SQAP describes the sampling strategy, sampling methodology, and analytical program used to investigate potential hazardous substance sources and potential targets. With few exceptions, the SI field activities were conducted in accordance with the approved SQAP. Deviations from the SQAP are described, when applicable, in this section and in the sampling location discussions in Section 6 (source areas) and Section 7 (target areas). All deviations to this SQAP were pre-approved by the EPA TM during the field sampling event and were recorded on a Sample Plan Alteration Form (Appendix B).

The SI established that the SI field activities were completed in accordance with the SQAP as planned.

The SQAP (Reference 5 of the HRS documentation record at proposal) referenced by the SI outlined the intended procedures for the SI field activities. Page 15 of the SQAP states that it, “outlines the technical and analytical approaches E & E will employ during SI field work.” Page 44 of the SQAP identifies the intended qualifications of field personnel and states that, “[t]he project field chemists operating the mobile laboratory require Demonstration of Capability certifications for any methods being used.”

Page 54 of the SQAP further describes the requisite qualifications of personnel, noting:

All field instruments and equipment used for analysis will be serviced and maintained only by qualified personnel. All instruments will be maintained by senior staff and/or electronics technicians.

The SQAP indicates that field operations were to be performed by qualified personnel. As the SI complied with the quality assurance and quality control measures set forth in the SQAP, including those regarding personnel qualifications, the SI and SQAP appropriately establish and document the quality assurance measures employed during the SI. A review of the SI, SQAP, and logbooks reveals no substantial deviations in intended procedures regarding the sampling of the Freeman School District Primary Well (See pages 29, 141–143 of the SI). Accordingly, sample collection was completed appropriately in adherence with all requirements, including personnel identification and qualification.

² The SQAP, Reference 5 to the HRS documentation record at proposal, is a combined field operations work plan and site-specific quality assurance project plan, equivalent to a combined Sampling and Analysis Plan and *Quality Assurance Project Plan*.

Furthermore, the SQAP cites the EPA 1993 document, *Data Quality Objectives Process for Superfund Interim Final Guidance* (DQO Guidance). Page 9 of the DQO Guidance states that:

Mandatory quality assurance (QA) requirements for EPA environmental data collection activities are established in EPA Order 5360.1. . . . Both documents [EPA Order 5360.1 and the NCP] emphasize that Superfund environmental data must be of known quality and require the development of Quality Assurance Project Plans (QAPPs) for all environmental data collection activities to achieve this goal.

The DQO Guidance on page 11 further identifies that “[t]he DQO Process and the SAP [Sampling Analysis Plan] requirements satisfy EPA Order 5360.1.” The SQAP was developed in adherence to these guidelines. Additionally, page 15 of the SQAP indicates that it provides the quality assurance requirements that will be used and is “intended to be combined with information presented in E & E’s (2013a) quality management plan (QMP) for Region 10 START-IV.” Page 1-1 of the E&E QMP indicates that it meets EPA specific QA requirements, including “EPA CIO 2105.0 (formerly 5360.1 A2), Policy and Program Requirements for the Mandatory Agency-wide Quality System.” (See attachment 1 of this support document.) These documents provide a link with the agency requirements outlined in EPA Order CIO 2105.0 (formerly EPA Order 5360.1)³. Thus, as the data resulting from the sample collection during the SI were in accordance with the procedures in the SQAP, the resulting data were collected in accordance with agency requirements and are of known and documented quality. These quality assurance measures were designed, documented, and implemented to ensure qualified personnel conduct sampling and that sampling results are of known and documented quality.

This comment results in no change to the HRS score and no change in the decision to list the Site on the NPL.

3.6 Source

Comment: CHS and Mr. Pettibone challenged EPA’s association of carbon tetrachloride with the soil source located at the Site. These comments raised the following issues:

- Challenges to the association of carbon tetrachloride with the Site soil source based on the levels of carbon tetrachloride detected in soil samples;
- Challenges to the adequacy of the investigation identifying hazardous substances with the source; and
- Challenges to the adequacy of background soil samples used in associating hazardous substances with the source.

Response: Carbon tetrachloride and chloroform are correctly associated with the soil source that was identified in the HRS documentation record at proposal. During the SI, EPA sampled the source area near the grain storage and grain elevator, obtained background samples from a portion of the property that was not expected to be impacted by historical facility operations, and obtained upgradient soil samples from the Old Freeman Clay Pit. This investigation provided sufficient data to associate the carbon tetrachloride and chloroform (a degradation product of carbon tetrachloride) contamination at the Site with the identified soil source adjacent to the grain facility.

³ EPA Order CIO 2105.0 (formerly EPA Order 5360.1) contains “the minimum requirements for the mandatory Agency-wide Quality System.” Additional information about EPA Order CIO 2105.0 is available on-line at: <http://www.epa.gov/irmpoli8/policies/21050.pdf>

HRS Section 1.1, *Definitions*, defines a source as the following:

Any area where a hazardous substance has been deposited, stored, disposed, or placed, plus those soils that have become contaminated from migration of a hazardous substance. Sources do not include those volumes of air, ground water, surface water, or surface water sediments that have become contaminated by migration, except: in the case of either a ground water plume with no identified source or contaminated surface water sediments with no identified source, the plume or contaminated sediments may be considered a source. (emphasis added).

HRS Section 2.2, *Characterize sources*, directs the scorer to characterize the site sources and associated hazardous substances. It states:

Source characterization includes identification of the following:

- Sources (and areas of observed contamination) at the site.
- Hazardous substances associated with these sources (or areas of observed contamination).
- Pathways potentially threatened by these hazardous substances.

HRS Section 2.2.2, *Identify hazardous substances associated with a source*, states:

For each of the three migration pathways, consider those hazardous substances documented in a source (for example, by sampling, labels, manifests, oral or written statements) to be associated with that source when evaluating each pathway. In some instances, a hazardous substance can be documented as being present at a site (for example, by labels, manifests, oral or written statements), but the specific source(s) containing that hazardous substance cannot be documented. For the three migration pathways, in those instances when the specific source(s) cannot be documented for a hazardous substance, consider the hazardous substance to be present in each source at the site, except sources for which definitive information indicates that the hazardous substance was not or could not be present.

Pages 15–16 of the HRS documentation record at proposal describe the source characterization and sampling activities that identified hazardous substances in the subsurface soil at the grain facility, stating:

In April 2014, subsurface soil samples were collected at the Grain Handling Facility at Freeman as a component of the EPA SI (Ref. 4, p. 41). A Sampling and Quality Assurance Plan (SQAP) was developed prior to conducting sampling work which outlined the numbers and types of samples to be collected and the analytical methods to be applied (Ref. 5, pp. 32 and 33). Sampling techniques employed were in accordance with the SQAP (Ref. 4, p. 29). Deviations from the SQAP were approved by the EPA and were documented in a Sample Plan Alteration Form (Ref. 4, p. 29).

A total of 14 borings (SB01 through SB14) were drilled at the Grain Handling Facility at Freeman using a hydraulic direct-push sampling system and subsurface samples were collected for the purpose of determining whether carbon tetrachloride was present in subsurface soils near this operation (Ref. 4, pp. 30, 41, and 64 [Figure 3-2]). Drilling activities were initiated near the grain elevator and scale house since these features appeared to be the most likely locations for historic pesticide application to grain, and are often associated with the presence of carbon tetrachloride contamination at facilities where this compound was used (Ref. 4, p. 41; Ref. 17, p. 2). Between two and seven grab subsurface soil samples were collected from each boring (Ref. 4, pp. 70, 71, and 72).

In addition, one background boring (BK01) was drilled using the direct-push drill rig on the southeastern portion of the Grain Handling Facility at Freeman property in an area expected to be unaffected by facility operations (Ref. 4, pp. 38, and 64 [Figure 3-2]).

...

Analytical results indicate the presence of a subsurface soil source of carbon tetrachloride and chloroform contamination at the Grain Handling Facility at Freeman (see Section 2.2.2, Table 1 for specific sample numbers, sample depths, and reference citations). Subsurface soil samples that define the area of contaminated soil were used to develop a volume of contaminated soil. This volume is estimated to be 1,345 cubic yards (see Section 2.4.2.1.3).

During the SI, the site source area was sampled to identify and associate hazardous substances with the site soil source. Multiple background samples were collected from areas surrounding the source area to ensure that the hazardous substances (carbon tetrachloride and chloroform) were not ubiquitous in the area. Additionally, neither EPA nor commenters have identified other source areas within the vicinity of the Site as being likely to contain carbon tetrachloride and chloroform or contribute to Site-related contamination. The following subsections address the specific comments related to the source identification:

- 3.6.1 Soil Source: Scale of Contamination
- 3.6.2 Association of Carbon Tetrachloride with the Site Soil Source
- 3.6.3 Soil Source: Adequacy of Background Soil Samples

3.6.1 Soil Source: Scale of Contamination

Comment: Mr. Pettibone submitted comments that question the association of carbon tetrachloride with the soil source. Mr. Pettibone stated that of the 14 soil borings drilled at the grain facility at Freeman, “only 6 showed any indications of carbon tetrachloride.” Mr. Pettibone commented on “a majority of the results being estimates,” further asserting that only two results from sample SB13 and one result from sample SB14 contained concentrations of carbon tetrachloride elevated greater than laboratory detection limits. Mr. Pettibone also commented that a Maximum Contaminant Level (MCL) for carbon tetrachloride is provided for water but none is provided for soil.

Response: Hazardous substances—carbon tetrachloride and chloroform—were appropriately associated with soil Source 1, in accordance with HRS Section 2.2.2, *Identify hazardous substances associated with a source*. In associating hazardous substances with a source, the HRS has no requirement that the hazardous substance be found at any particular concentration or that a hazardous substance be widespread—the HRS only requires that the hazardous substance be associated with the source. Also, Mr. Pettibone’s statement regarding the number of soil samples with detections of carbon tetrachloride greater than laboratory detection limits is incorrect. That is, although many soil Source 1 contaminated sample results are less than the quantitation limit, they are greater than the detection limit; and, although qualified as estimated, such results are still sufficient to document the presence of hazardous substances above that level in background levels and thus associated with soil Source 1. Finally, the HRS does not require the source sample analytical results be compared to regulatory limits such as an MCL.

First, inasmuch as Mr. Pettibone’s comments call into question the association of hazardous substances with soil Source 1 based on the concentration or extent of contamination identified, this is not a consideration specified by the HRS.

HRS Section 1.1, *Definitions*, defines a source to be “[a]ny area where a hazardous substance has been deposited, stored, disposed, or placed, plus those soils that have become contaminated from migration of a hazardous substance.”

In identifying substances associated with a source at a site, HRS Section 2.2.2, *Identify hazardous substances associated with a source*, states:

For each of the three migration pathways, consider those hazardous substances documented in a source (for example, by sampling, labels, manifests, oral or written statements) to be associated with that source when evaluating each pathway.

Thus, the HRS simply requires the documentation that the soil came to be contaminated by migration of a hazardous substance to be considered an eligible soil source. It does not require the substance be at any particular concentration.

Pages 15-16 of the HRS documentation record at proposal identify the hazardous substances associated with soil Source 1 contaminated soil, based on the presence of hazardous substances in source samples as follows:

In April 2014, subsurface soil samples were collected at the Grain Handling Facility at Freeman as a component of the EPA SI (Ref. 4, p. 41).

...

A total of 14 borings (SB01 through SB14) were drilled at the Grain Handling Facility at Freeman using a hydraulic direct-push sampling system and subsurface samples were collected for the purpose of determining whether carbon tetrachloride was present in subsurface soils near this operation (Ref. 4, pp. 30, 41, and 64 [Figure 3-2]). Drilling activities were initiated near the grain elevator and scale house since these features appeared to be the most likely locations for historic pesticide application to grain, and are often associated with the presence of carbon tetrachloride contamination at facilities where this compound was used (Ref. 4, p. 41; Ref. 17, p. 2). Between two and seven grab subsurface soil samples were collected from each boring (Ref. 4, pp. 70, 71, and 72).

In addition, one background boring (BK01) was drilled using the direct-push drill rig on the southeastern portion of the Grain Handling Facility at Freeman property in an area expected to be unaffected by facility operations (Ref. 4, pp. 38, and 64 [Figure 3-2]).

Analytical protocols applied to the SI samples included on-site field laboratory analysis for carbon tetrachloride using Region 10 EMP Field Analytical SOP 303a Standard Operating Procedures for Analysis of Volatile Organics in Soil and Water Using the Hapsite GC/MS (Ref. 4, p. 167; Ref. 5, p.101); and off-site fixed laboratory analysis for volatile organic compounds (VOCs) using USEPA Contract Laboratory Program (CLP) Statement of Work (SOW) for Multi-Media, Multi-Concentration Organics Analysis (SOM01.2) (Ref. 4, pp. 228 and 278). The field GC/MS calibration logbook is provided as Reference 8.

...

Analytical results indicate the presence of a subsurface soil source of carbon tetrachloride and chloroform contamination at the Grain Handling Facility at Freeman (see Section 2.2.2, Table 1 for specific sample numbers, sample depths, and reference citations). Subsurface soil samples that define the area of contaminated soil were used to develop a volume of contaminated soil. This volume is estimated to be 1,345 cubic yards (see Section 2.4.2.1.3).

Page 21 of the HRS documentation record at proposal discusses background sample results presented:

For illustration purposes, concentrations of organic compounds in background soil samples are presented. Three background subsurface soil samples (BK01SB03, BK01SB04, and BK01SB12) were collected within the property footprint of the Grain Handling Facility at Freeman and three upgradient background subsurface soil samples (HA01SB13.5, HA02SB2.5, and HA03SB09) were collected between the Old Freeman Clay Pit and the Grain Handling Facility at Freeman during the EPA SI (Ref. 4, pp. 38 and 64). Similar to release sample matrix characteristics which were primarily either sand with silt, clay, silt with clay, or gravel with clay; background and upgradient background samples also consisted of silt with clay or sand with silt though one upgradient sample consisted of clay with silt and one consisted of sandy gravel with clay (see Table 2 below for matrix descriptions by sample and corresponding references). Organic results for background and upgradient background subsurface soil samples are presented below in Table 2.

Table 2 on pages 22–23 of the HRS documentation record at proposal shows the carbon tetrachloride and chloroform concentrations for these background samples—all qualified as not detected and below the contract-required quantitation limit (CRQL) (the highest CRQL being 6.2 micrograms/kg for both substances).

Page 17 of the HRS documentation record at proposal states that:

Thirty-one subsurface soil samples were collected from the Grain Handling Facility at Freeman during the EPA SI (Ref. 4, pp. 70, 71, and 72 [Table 3-1]). Those samples containing hazardous substances are presented below in Table 1.

Table 1 on pages 18-20 of the HRS documentation record at proposal shows analytical results documenting the presence of hazardous substances (carbon tetrachloride and chloroform) in soil Source 1 samples, consistent with the HRS.

Additionally, Mr. Pettibone is incorrect in his statement that “only two results from sample SB13 and one result from sample SB14 contained concentrations of carbon tetrachloride elevated greater than laboratory detection limits.” (emphasis added). As explained below, many soil Source 1 contaminated sample results are less than the quantitation limit, but are greater than the detection limit; and, although qualified as estimated, such results are still sufficient to document the presence of hazardous substances associated with soil Source 1 as they are greater than the background levels.

HRS Section 1.1, *Definitions*, provides definitions for various analytical limits.

- It defines a detection limit as the “[l]owest amount that can be distinguished from the normal random ‘noise’ of an analytical instrument or method. For HRS purposes, the detection limit used is the method detection limit (MDL) or, for real-time field instruments, the detection limit of the instrument as used in the field.”
- It defines a method detection limit as the “[l]owest concentration of analyte that a method can detect reliably in either a sample or blank.”
- It defines a sample quantitation limit as the “[q]uantity of a substance that can be reasonably quantified given the limits of detection for the methods of analysis and sample characteristics that may affect quantitation (for example, dilution, concentration).”
- And it defines the CRQL as the:

[s]ubstance-specific level that a CLP laboratory must be able to routinely and reliably detect in specific sample matrices. It is not the lowest detectable level achievable, but rather the level that a

CLP laboratory should reasonably quantify. The CRQL may or may not be equal to the quantitation limit of a given substance in a given sample. For HRS purposes, the term CRQL refers to both the contract-required quantitation limit and the contract-required detection limit.

Based on fixed laboratory results, Table 1 on pages 18–20 of the HRS documentation record at proposal shows that two carbon tetrachloride results from boring SB13 (samples SB13SB21.2 and SB13SB30) and one carbon tetrachloride result from boring SB14 (sample SB14SB21.5) contained carbon tetrachloride greater than the contract required quantitation limit (CRQL). Chloroform was also detected at levels greater than the CRQL in four source samples. Page 19 of the HRS documentation record at proposal clarifies that the “adjusted CRQL used meets the definition [of CRQL] provided in Ref. 1, p. 51586” (pointing to Section 1.1, *Definitions*, of the HRS, included as Reference 1 of the HRS documentation record at proposal).

And, an additional 13 samples exhibited detected carbon tetrachloride concentrations below the CRQL (SB09SB19.5, SB09SB25, SB10SB18.5, SB10SB20.5, SB11SB20, SB11SB21.5, SB11SB28, SB12SB28.5, SB13SB20, SB13SB23, SB13SB27.5, SB14SB18, SB14SB23.5). Although these carbon tetrachloride results are qualified as estimated due to detection below the CRQL, they still document the presence of carbon tetrachloride in the source samples consistent with the HRS. Page 20 of the HRS documentation record at proposal makes this clear in the definition of the “JQ” qualifier applied to these results, explaining this means that:

The analyte was positively identified and the associated numerical value is an estimated quantity. The result is estimated because the concentration is below the Contract Required Quantitation Limits (Ref. 4, pp. 229, 230, and 280). (emphasis added).

Therefore, carbon tetrachloride and chloroform were positively identified and their presence was confirmed in the associated samples.

Furthermore, comparison of source sample analytical results to regulatory limits (such as an MCL) is not a requirement of the HRS. The MCL specifically is a regulatory limit that applies to water samples, not soil. And, in general, the HRS is not restricted to evaluating contaminant levels above regulatory limits. On July 16, 1982, when responding to public comments on the proposed (original) HRS (47 FR 31188), and again on September 8, 1983 (48 FR 40665), the Agency rejected the idea that releases within regulatory limits should not be considered under the HRS. As the Agency noted in 1982:

[E]mission or effluent limits do not necessarily represent levels which cause no harm to public health or the environment. These limitations are frequently established on the basis of economic impacts or achievability.

The HRS does, however, consider whether releases are above regulatory limits specifically identified in the HRS in evaluating target populations, increasing by a factor of 10 the weight assigned populations exposed to contaminants above the limits. However, at this site, the HRS score was not based on target populations being exposed to contaminants above regulatory limits.⁴

EPA does not rely solely on the observed release factor and the association of contaminants with sources to represent the risk to human health and the environment posed by a site. Instead, the relative risk posed by a site is approximated by the total HRS score, which incorporates the observed release factors with other factors such as waste characteristics (including waste quantity, toxicity, and persistence) and targets. This total HRS score

⁴ As shown on pages 41–43 of the HRS documentation record at proposal, target populations subject to Level I concentrations are established based on ground water carbon tetrachloride concentrations exceeding the HRS-specified cancer-risk screening concentration.

reflects the risk of the site relative only to the other sites that have been scored. The actual degree of contamination and its effects are more fully determined during the RI that typically follows listing.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.6.2 Association of Carbon Tetrachloride with the Site Soil Source

Comment: CHS challenged the adequacy of EPA's investigation of the contaminated soil at the Site. CHS stated that the soil investigation conducted is insufficient to determine the nature and extent of carbon tetrachloride in soil near the Freeman School District Complex. Specifically, CHS argued that:

- The SI design and implementation of the soil investigation indicated that there was "a strong bias toward the grain-handling facility as a source area."
- Full characterization of the source will be required before a conceptual site model can be developed to determine a cleanup approach for the Site. CHS stated that this should include characterization of the nature and extent of carbon tetrachloride in soil and groundwater, identification and delineation of source areas, and evaluation of potential migration pathways.

Response: The carbon tetrachloride is associated with the Source 1 soil at the Grain Handling Facility at Freeman for HRS purposes. CHS has not presented any evidence to refute EPA's identification of the soil contamination as a Site source, and CHS has not shown that any part of the HRS scoring of the Site has been calculated incorrectly. Regarding further investigation at the Site, such activities need not take place prior to NPL listing, consistent with the HRS as a screening tool, and may be carried out as a later step in the Superfund process.

The HRS does not contain specific requirements regarding the extent of investigation or selection of areas to be sampled for HRS scoring purposes. However, as explained in section 3.6.1, Soil Source: Scale of Contamination, of this support document, hazardous substances carbon tetrachloride and chloroform were appropriately associated with soil Source 1, in accordance with HRS Section 2.2.2, *Identify hazardous substances associated with a source*. Section 2.2.2, *Identify hazardous substances associated with a source*, of the HRS, only states:

For each of the three migration pathways, consider those hazardous substances documented in a source (for example, by sampling, labels, manifests, oral or written statements) to be associated with that source when evaluating each pathway.

Sampling results discussed in section 3.6.1 of this support document and on pages 15–24 of the HRS documentation record at proposal show elevated levels of carbon tetrachloride and chloroform are present in the soil located on the grain facility property. And, sufficient soil samples were taken at the Site to establish that carbon tetrachloride and chloroform do in fact exist at elevated levels at the Site. As described on pages 15 and 17 of the HRS documentation record at proposal, SI sample collection at the grain facility at Freeman included 31 subsurface soil samples from 14 borings.

SI Focus on Grain Facility Area

As discussed below, the SI focuses on the grain facility at Freeman because a review of possible sources indicated that it was the only possible source to have likely handled, used, or been associated with carbon tetrachloride. EPA properly identified locations or features to be sampled based on information derived from a review of background information and interviews with area representatives and regulatory agencies.

First, concern that a possible source of the release of carbon tetrachloride to ground water may be located at the grain facility at Freeman was based on a review of existing information and preliminary knowledge of conditions

in the area of the contaminated water supply well at the Freeman School. Page 35 of the HRS documentation record at proposal explains why carbon tetrachloride may be linked to grain facility at Freeman operations:

In grain elevator storage, the formulation was generally applied during bin loading with a layering method in which it was pumped or poured over the grain between drafts from 10 to 20 feet deep (Ref. 16, p. 1). Historically, carbon tetrachloride has entered the environment due to fumigation or direct application of the 80-20 mixture (Ref. 17, p. 2). Unintended releases of carbon tetrachloride have occurred via spills and leaks from various transporting devices and equipment, such as rail cars, delivery trucks, leaky hoses, and onsite storage tanks, and the improper disposal of excess product by simply pouring it on the ground (Ref. 17, p. 2)

Although no documentation of mechanisms or compounds used to control insects and pests prior to ownership of the Grain Handling Facility at Freeman by the current facility operator were found; it is conceivable that carbon tetrachloride was used at this location since carbon tetrachloride was widely used for pest control purposes beginning in 1911 and continuing until 1986 (Ref. 11, p. 210; Ref. 17, p. 3) and since the facility began operations in 1955 (Ref. 17, p. 3).

Page 35 of the HRS documentation record at proposal also states that the “EPA SI confirmed that a subsurface contaminated soil source of carbon tetrachloride and chloroform (Source 1 of this document) is present on the grain facility property at Freeman property (Ref. 4, p. 52).”

Second, other possible sources were considered, and the decision to focus SI sampling on the grain facility at Freeman was based on available information relating to the Site. Page 37 of the HRS documentation record at proposal describes the setting in the vicinity of the Site:

The town of Freeman has few residences and is dominated by the Freeman School District campus (Ref. 3; Figure 1). The elementary, middle and high schools of the district are situated in three separate buildings on this campus (Ref. 13, p. 1). The Freeman Store is present on the north end of town (Figure 2). A former clay borrow pit known as the Old Freeman Clay Pit is located approximately 0.5 mile northeast of the Grain Handling Facility at Freeman (Ref. 4, pp. 15 and 62 [Figure 2-2]; Ref. 13, p. 8 [Figure 2]).

On planning SI activities, page 31 of the HRS documentation record at proposal mentions that a SQAP was developed prior to conducting SI sampling. This SQAP was included as Reference 5 of the HRS documentation record at proposal. On page 19, the SQAP identifies previous investigation information considered in the planning of the SI, including:

- Washington State Department of Health, Technical Assessment, 2008
- Washington State Department of Ecology, Summary Report, 2012
- GeoEngineers, Inc., Feasibility Evaluation, Production Well Evaluation – Carbon Tetrachloride Contamination, 2013
- Ecology and Environment, Inc., Preliminary Assessment 2013.

On page 27, the SI report (Reference 4 of the HRS documentation record at proposal) also describes planning inspection activities:

Sampling under the Freeman Ground Water Contamination SI was conducted at possible sources of CERCLA-regulated substances and at areas (i.e., targets) that may have been contaminated through the migration of hazardous substances from site sources. The features identified for inspection under the SI were determined based on a site visit, interviews with workers, interviews with regulatory agencies, and a review of background information.

On pages 20–21, the SQAP (Reference 5 of the HRS documentation record at proposal) summarizes the Ecology Status Report (Reference 13 of the HRS documentation record at proposal) as follows:

In August 2012, the Washington State Department of Ecology (Ecology) completed a report summarizing the history of known carbon tetrachloride ground water contamination in the city of Freeman (Leinart 2012). This report also identified businesses and features that were considered potential sources for this contamination. The report categorized the likelihood of each feature being a source from high to low. These features, and their presumed likelihood of being a source of contamination, are as follows (Leinart 2012):

- **High Likelihood** –
 - Cenex Harvest States, Freeman (formerly known as Rockford Grain Growers).
- **Medium Likelihood** –
 - UPRR main line and rail siding located approximately 300 feet east of the Marlow well.
 - The abandoned Old Freeman Clay Pit is located approximately 0.15 mile northeast of the Marlow well and may have been used for illegal dumping or disposal of carbon tetrachloride.
 - Freeman School District facilities that may have historically used carbon tetrachloride in welding/metal fabrication and automotive workshops, the school bus service/maintenance shop, and/or laboratory classrooms.
- **Low Likelihood** –
 - Freeman School District underground storage tanks (USTs).
 - Freeman School District surface water outfall.
 - Freeman Store automotive gasoline service station UST.
 - Former brick kiln.
 - State Route 27.
 - Former shops and out-buildings at the Marlow residence.

Features assigned a high or medium likelihood were those that are known to be associated with the use of carbon tetrachloride, those with a reasonable opportunity for improper waste disposal or storage practices, and/or those of sufficient scale to have possibly caused either a large release of carbon tetrachloride or ongoing small releases. Features assigned a low likelihood were those that were small in scale and that would not ordinarily use, store, or dispose carbon tetrachloride in a manner, or in quantities, that could result in regional aquifer contamination. At the time of this report, no specific data or information had been uncovered by Ecology documenting the use, storage, or disposal of carbon tetrachloride in the Freeman area.

The SQAP also considered the Freeman School District sanitary waste water treatment system and current/former underground storage tanks located in the Freeman area. On page 23 of Reference 5 of the HRS documentation record at proposal, the SQAP notes that “[d]ue to the construction parameters of the sanitary waste water treatment system, it appears to be an unlikely source of carbon tetrachloride contamination to ground water.” On

page 24, the SQAP states that “all of the Freeman area USTs are associated with petroleum products. None were found to be associated with fumigant products generally or carbon tetrachloride specifically.”

On page 22, the SQAP describes the contents of the preliminary assessment report.

The PA summarized the site setting, known contaminants, potential sources, and previous investigations that had been conducted in the area in relation to the carbon tetrachloride ground water plume. The PA stated that a potential source of the carbon tetrachloride ground water contamination was the Cenex Harvest States grain handling facility, though the use of carbon tetrachloride at this location had not yet been confirmed. The PA also stated that other, less likely, sources of carbon tetrachloride in the area included private grain handling facilities (if present), the UPRR main line and rail siding, the Former Freeman Clay Pit, potential historic use of this chemical at Freeman School District facilities (e.g., welding/metal fabrication and automotive workshops, the school bus service/maintenance shop, and/or laboratory classrooms), a former brick kiln, State Route 27, and former shops and out-buildings associated with the former Marlow residence. USTs in the Freeman area were confirmed to be associated solely with petroleum products and for this reason were not considered to be a potential source of carbon tetrachloride contamination.

On page 30, the SQAP states that the Cenex Harvest States facility (the grain facility at Freeman) was identified for inspection “[b]ased on a review of background information and discussions with EPA representatives.” On page 31, the SQAP states:

The use of carbon tetrachloride at the Cenex Harvest States grain handling facility has not been confirmed; however, methods used to control pests and insects prior to Cenex Harvest States’ assuming ownership of the business are not known. Given the widespread use of carbon tetrachloride for these purposes beginning in 1911 and continuing until 1986 coupled with the age of the facility, which began operations in 1955, it is conceivable that carbon tetrachloride was used at this location. Although other potential sources of carbon tetrachloride exist in the project area, this SI will focus on the Cenex Harvest States grain handling facility due to its higher likelihood of being a source for carbon tetrachloride contamination.

Page 10 of the HRS documentation record at proposal notes the focus of the SI on grain facility at Freeman:

In 2014, the EPA conducted a Site Inspection (SI) for the Freeman Ground Water Contamination (Ref. 4, p. 13). At that time, the source of ground water contamination was not known, but it was postulated that the Grain Handling Facility at Freeman was the most likely source (Ref. 13, p. 3). For this reason, the SI focused on subsurface soil sampling from borings at the Grain Handling Facility at Freeman (termed the Cenex Harvest States grain handling facility in the SI report) (Figure 3 and Ref. 4, p. 41).

Reference 13, cited in the above text, is the August 16, 2012 *Freeman School Wells Contaminated Ground Water Status Report* (hereinafter ‘Ecology Status Report’) mentioned in the SQAP. Pages 37–38 of the HRS documentation record at proposal describe information in the Ecology Status Report related to other possible sources of carbon tetrachloride near the Site:

In August 2012, the Washington State Department of Ecology (Ecology) completed a report summarizing the history of known carbon tetrachloride ground water contamination in the city of Freeman (Ref. 13). This report also identified businesses and features that were considered potential sources for this contamination (Ref. 13, p. 2). Of these potential sources, only two were located upgradient of the Freeman School District out-of-use well; these being the Grain

Handling Facility at Freeman and the Old Freeman Clay Pit (see Figure 2). The report speculated that the Old Freeman Clay Pit may have been used for dumping or illegal disposal (Ref. 13, p. 3).

On pages 4–5 of Reference 13, the Ecology Status Report, notes that

Sources of information and data used for this report include the following:

- Correspondence from and conversations with WA Dept of Health staff.
- Records on file with the WA Dept of Ecology, Eastern Regional Office, Spokane.
- Databases maintained by the WA Dept of Ecology.
- Conversations with Freeman School District staff.
- A site visit conducted on July 24, 2012
- Various publications by the US EPA, USGS and WA Division of Geology and Earth Resources.

Page 38 of the HRS documentation record at proposal explains that the Old Freeman Clay Pit—the only other likely possible source at the time of the SI—was investigated during the SI, and the results of that sampling do not support the pit as a source of carbon tetrachloride in ground water at the Site:

Although no evidence of this use [illegal dumping at the Old Freeman Clay Pit] has been located in available documents, three upgradient background borings (HA01, HA02, and HA03) were placed between an area of ponded water at the Old Freeman Clay Pit and the Grain Handling Facility at Freeman during the EPA SI in order to determine whether potential source(s) on the Old Freeman Clay Pit property may be contributing to carbon tetrachloride ground water contamination in the area (Ref. 4, pp. 38 and 64 [Figure 3-2]; Ref. 6, p. 15).

...

No VOCs, including carbon tetrachloride and chloroform, were detected in these samples (see Table 2 for analytical results and reference citations). A source of carbon tetrachloride or chloroform was not located at the Old Freeman Clay Pit.

Further Investigation

EPA agrees with CHS's statement that additional site investigations should normally be conducted prior to any remedial action being implemented. It is EPA's standard procedure to conduct additional site investigations at sites placed on the NPL prior to any remedial actions. However, this is a separate step in the Superfund process. The HRS is a screening tool that uses limited resources to determine whether a site should be placed on the NPL for possible Superfund response. EPA must balance the need to fully characterize a site with the limited resources available to collect and analyze site data. For this reason, EPA generally will not investigate a site more than necessary to document the site score is above the HRS cutoff score. However, any additional data that characterizes site conditions could provide useful information during the RI.

The HRS is intended to be a "rough list" of prioritized hazardous sites; a "first step in a process--nothing more, nothing less." Eagle Picher Indus. v. EPA, 759 F.2d 922, 932 (D.C. Cir. 1985) (Eagle Picher II). EPA would like to investigate each possible site completely and thoroughly prior to evaluating them for proposal for the NPL, but it must reconcile the need for certainty before action with the need for inexpensive, expeditious procedures to identify potentially hazardous sites. The D.C. Circuit Court of Appeals has found EPA's approach to solving this conundrum to be "reasonable and fully in accord with Congressional intent." Eagle Picher Industries, Inc. v. EPA, (759 F.2d 905 (D.C. Cir. 1985) Eagle Picher I).

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.6.3 Soil Source: Adequacy of Background Soil Samples

Comment: CHS questioned the identification of a carbon tetrachloride contaminated soil source, stating that the samples used as background samples were not adequate to show the presence of carbon tetrachloride greater than the background level. CHS concluded that accurate background conditions for carbon tetrachloride in soil were not established, including the presence or absence of carbon tetrachloride in soil at depths below 13.5 below ground surface (bgs) for areas outside the grain facility property. CHS asserted that conclusions regarding the nature or extent of carbon tetrachloride contamination in soil at the Site cannot be made because the soil samples showing elevated contamination and soil background samples were taken at different depths and contain different levels of moisture.

First, CHS asserted that the contaminated soil samples and background soil samples are not similar because the sample sets were not taken from similar depths.

- CHS stated that the soil samples that contain quantifiable concentrations of carbon tetrachloride were taken from deeper depths than the background or upgradient soil samples.
- CHS commented that upgradient and background soil samples are not representative of soil samples taken at the grain facility below 12 ft bgs.

Second, CHS asserted that the contaminated soil samples and background soil samples are not similar because the samples sets do not have similar moisture contents.

- CHS asserted that the solid samples with detections of carbon tetrachloride are labeled as moist in boring logs; but, due to the soil moisture content of soil samples, consistent with typical soil porosity, the samples are described more accurately as fully saturated.
- CHS contended that soil samples collected from less than 12 feet bgs had less moisture content than the deeper samples taken that had carbon tetrachloride detected at concentrations exceeding the field laboratory reporting limits or fixed laboratory CRQLs.
- CHS stated that the background soil samples taken at the Freeman Grain property (BK1) ranged from 15–21 percent moisture content, the upgradient samples taken north of the property ranged from 10–23 percent moisture content, and samples taken from the Freeman Grain property that had carbon tetrachloride detected at concentrations exceeding reporting limits ranged from 31–42 percent moisture content.

Response: The HRS documentation record at proposal properly used the background soil samples to establish that the soil containing carbon tetrachloride came to be contaminated due to migration of a hazardous substance, and therefore qualifies as a source for HRS purposes. These background soil samples provide evidence that the carbon tetrachloride contaminated soil source is likely due to historical operations at the grain facility and are not due to any other nearby source.

As quoted in section 3.6, Source, of this support document, the HRS only requires that sources be identified and that hazardous substances be associated with each source. It does not require the extent of the source or how the soil came to be contaminated be established.

At this site, hazardous substances were properly associated with the Site source (see sections 3.6.1, Soil Source: Scale of Contamination, and 3.6.2, Association of Carbon Tetrachloride with Site Soil Source, of this support document). Background soil samples were not used to compare to source soil samples to show a specific magnitude of increase in contaminant concentrations. However, the background soil samples at this site were used

to show that carbon tetrachloride (a manmade substance that is not naturally occurring in the environment⁵) is not ubiquitous at the Site, that the contamination in soil identified as Source 1 in the HRS documentation record at proposal is likely due to migration from the grain facility, and that the contamination did not originate from any other known source upgradient of the background soil samples.

In identifying substances with a source at a site, HRS Section 2.2.2, *Identify hazardous substances associated with a source*, states:

For each of the three migration pathways, consider those hazardous substances documented in a source (for example, by sampling, labels, manifests, oral or written statements) to be associated with that source when evaluating each pathway.

As presented on pages 21–23 of the HRS documentation record at proposal, four background samples were collected to determine whether the carbon tetrachloride contaminated soil source was located only at the grain facility. These samples included background samples HA01, HA02, HA03, and BK01. Samples HA01, HA02, and HA03 are all located less than 100 meters to the north of the grain facility and the source samples, and sample BK01 is located less than 100 meters to the southeast of the grain facility and source samples; all of the background samples are located in the same soil formation.

- Sample HA01 was collected 13.5 feet below ground surface (bgs) in the uppermost clay unit.
- Sample HA02 was collected 2.5 feet bgs and was collected in the sandy gravel overburden layer.
- Sample HA03 was collected 9 feet bgs in a sand and silt layer below the clay layer.
- Sample BK01 was collected 12 feet bgs in a silt and clay layer.

Carbon tetrachloride was not detected in any of the background soil samples.

These background samples demonstrate that there is no contamination at the soil surface, in the clay unit, or immediately below the clay unit north of the facility (i.e., there is no other local source of carbon tetrachloride to the north of background sample locations located immediately north of the grain facility), and that carbon tetrachloride is not ubiquitous in the general area of the Site.

The depth of the background samples also supports that the carbon tetrachloride-contaminated soil source is due to historical operations at the grain facility. The approximate elevations of the background and source samples are from the same elevation when changes in land surface are considered. The surface at the grain facility where the Site source soil samples were collected is 2,600 above mean sea level (amsl). These samples, as documented in the HRS documentation record at proposal, encountered contamination between approximately 17.5 and 19 feet bgs; therefore, this contamination was encountered at an approximate elevation of 2,581 feet amsl. Both background samples BK01 and HA03 were similarly collected from this elevation. Sample HA03 was collected from an elevation of 2,589 feet amsl and was collected from 9 feet bgs, demonstrating that no hazardous substances are present to the north of the facility at a depth of 2,580 feet amsl, which is one foot deeper than the contamination encountered beneath the grain facility. Similarly, sample BK01 was collected from an elevation of 2,593 feet amsl and was collected from 12 feet bgs, demonstrating that contamination is not present at 2,581 feet amsl, 100 meters southeast of the grain facility.

The similarity of sample elevations demonstrates that the source soil samples are not collected from soil “deeper” than these two background samples (BK01 and HA03). Results also demonstrate that contamination is not present

⁵ Additional information about carbon tetrachloride is available online at:
<http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=35>

at similar levels in the soil just 100 meters north and southeast of the contaminated soil source samples beneath the grain facility.

Regarding the commenter's concerns about the soil moisture content, the HRS does not have any requirements for the soil moisture content. As discussed below in section 3.7.2, *Attributing the Significant Increase in Carbon Tetrachloride in the Aquifer to the Soil Source*, of this support document, all of the samples collected at the Site were soil samples collected in accordance with appropriate guidance. The deeper soil samples are expected to have higher soil moisture content as the samples are closer to the water table and less impacted by evaporation to the surface. However, the soil moisture content has no impact on the presence or absence of a non-naturally occurring hazardous substance in the Site samples.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.7 Observed Release: Attribution

Comment: Both CHS and Mr. Pettibone questioned whether the contamination found in Freeman School release wells is attributable to the soil source at the Site. CHS commented that the HRS package at proposal, including the SI report, does not provide enough data to determine the source of carbon tetrachloride in the school district water supply wells.

Response: The HRS documentation record at proposal establishes that at least some of the significant increase of carbon tetrachloride identified in Freeman School wells is sufficiently attributable, for HRS purposes as a screening tool, to the soil source located at the Freeman Grain Facility property.

For all HRS pathways, the HRS requires the scorer to attribute some portion of the release to the site. This requirement is stated in HRS Section 2.3, *Likelihood of release*:

Establish an observed release either by direct observation of the release of a hazardous substance into the media being evaluated (for example, surface water) or by chemical analysis of samples appropriate to the pathway being evaluated (see sections 3, 4, and 6). The minimum standard to establish an observed release by chemical analysis is significantly above the background level. Further, some portion of the release must be attributable to the site analytical evidence of a hazardous substance in the media. Use the criteria in Table 2–3 as the standard for determining analytical significance. (emphasis added).

Specifically for the scoring of the ground water pathway, the ground water pathway section of the HRS states the requirement for attribution in HRS Section 3.1.1, *Observed release*:

Establish an observed release to an aquifer by demonstrating that the site has released a hazardous substance to the aquifer. Base this demonstration on either:

- Direct Observation— . . .
- Chemical analysis—an analysis of ground water samples from the aquifer indicates that the concentration of hazardous substance(s) has increased significantly above the background concentration for the site (see section 2.3). Some portion of the significant increase must be attributable to the site to establish the observed release. (emphasis added).

Attribution to the “site” is considered within the context of the meaning of “site” as defined by the HRS. HRS Section 1.1, *Definitions*, defines “site” as:

Area(s) where a hazardous substance has been deposited, stored, disposed, or placed, or has otherwise come to be located. Such areas may include multiple sources and may include the area between sources.

The HRS does not prescribe a particular methodology for establishing attribution for an observed release by chemical analysis. To meet this requirement, EPA conducts a site-specific analysis at each site to determine attribution of some portion of the significant increase in hazardous substances to the site. This analysis generally has two steps: first, determine whether the hazardous substances in the release are associated with the sources at the site; second, investigate other possible sources to determine if the significant increase is due to a source in the area surrounding the site. EPA conducted this analysis at this site and found that the evidence in the HRS documentation record at proposal establishes that at least part of the significant increase of carbon tetrachloride in the observed release wells at the Freeman School Complex is attributable to the soil source of carbon tetrachloride located at the grain facility property.

Association of Hazardous Substances in the Release with the Site Soil Source

The HRS documentation record at proposal establishes that the hazardous substances found in the observed release wells located at the Freeman School Complex are associated with the soil source located at the grain facility property. Sample data from the soil source at the Site show that carbon tetrachloride and chloroform, a degradation product of carbon tetrachloride, exist in the soil source at levels greater than the background levels. Pages 15–16 of the HRS documentation record at proposal provide information showing that carbon tetrachloride is associated with the subsurface soil located at the grain facility property based on sampling:

In April 2014, subsurface soil samples were collected at the Grain Handling Facility at Freeman as a component of the EPA SI (Ref. 4, p. 41). A Sampling and Quality Assurance Plan (SQAP) was developed prior to conducting sampling work which outlined the numbers and types of samples to be collected and the analytical methods to be applied (Ref. 5, pp. 32 and 33). Sampling techniques employed were in accordance with the SQAP (Ref. 4, p. 29). Deviations from the SQAP were approved by the EPA and were documented in a Sample Plan Alteration Form (Ref. 4, p. 29).

A total of 14 borings (SB01 through SB14) were drilled at the Grain Handling Facility at Freeman using a hydraulic direct-push sampling system and subsurface samples were collected for the purpose of determining whether carbon tetrachloride was present in subsurface soils near this operation (Ref. 4, pp. 30, 41, and 64 [Figure 3-2]). Drilling activities were initiated near the grain elevator and scale house since these features appeared to be the most likely locations for historic pesticide application to grain, and are often associated with the presence of carbon tetrachloride contamination at facilities where this compound was used (Ref. 4, p. 41; Ref. 17, p. 2). Between two and seven grab subsurface soil samples were collected from each boring (Ref. 4, pp. 70, 71, and 72).

...

Analytical results indicate the presence of a subsurface soil source of carbon tetrachloride and chloroform contamination at the Grain Handling Facility at Freeman (see Section 2.2.2, Table 1 for specific sample numbers, sample depths, and reference citations). Subsurface soil samples that define the area of contaminated soil were used to develop a volume of contaminated soil. This volume is estimated to be 1,345 cubic yards (see Section 2.4.2.1.3).

For additional information showing the analytical results of each soil boring and background sample, see Table 1 and Table 2, on pages 18–24 of the HRS documentation record at proposal. Page 17 of the HRS documentation record at proposal details the source samples associated with the soil source at the grain facility property in Table 1. These results indicate that these subsurface soil borings contain carbon tetrachloride above the quantitation limit, as described in section 3.6, Source, of this support document.

The HRS documentation record at proposal also establishes that the carbon tetrachloride contamination is capable of migrating through the soil because the source is not contained. Page 16 of the HRS documentation record at proposal establishes that the soil source is unlined and uncovered:

A ground water containment factor value of 10 (Ref. 1, p. 51598, Table 3-2) is assigned because there is evidence of hazardous substance migration from the source area (see Section 3.0); further, the contaminated soil source is unlined and uncovered (i.e., the source has no maintained engineered cover, or functioning and maintained run-on control system and runoff management system) (Ref. 4, pp. 136 and 137 [Photos 123, 124, 125, and 128]; Ref. 6, pp. 5-6).

The analysis outlined above properly establishes that carbon tetrachloride found in the release wells located at the Freeman School Complex is associated with the soil source of carbon tetrachloride located on the grain facility property.

The second step of the attribution analysis focuses on determining what other possible off-site sources could be contributing to the release at the Site and whether at least a portion of the significant increase came from the Site soil source. This was achieved using screening level information to document that no other source of a carbon tetrachloride release is known to have occurred within the vicinity of the Site, and that no other source in the vicinity of the Site was known to handle carbon tetrachloride or was generally associated with the use of carbon tetrachloride.

Lack of Plausible Off-site Sources

The HRS documentation record at proposal contains documentation supporting EPA's determination that the hazardous substance concentration in the ground water release is likely due in part from the Site and is not wholly due to an alternative source. Pages 37–38 of the HRS documentation record at proposal state in part:

The town of Freeman has few residences and is dominated by the Freeman School District campus (Ref. 3; Figure 1). The elementary, middle and high schools of the district are situated in three separate buildings on this campus (Ref. 13, p. 1). The Freeman Store is present on the north end of town (Figure 2). A former clay borrow pit known as the Old Freeman Clay Pit is located approximately 0.5 mile northeast of the Grain Handling Facility at Freeman (Ref. 4, pp. 15 and 62 [Figure 2-2]; Ref. 13, p. 8 [Figure 2]). The Old Freeman Clay Pit is situated on property currently owned by Mutual Materials Company (Figure 2; and Ref. 4, p. 15; Ref. 13, p. 8 [Figure 2]; Ref. 15, pp. 1 and 2). Beyond these uses, land near Freeman is primarily used for agricultural production (Ref. 4, p. 15).

In August 2012, the Washington State Department of Ecology (Ecology) completed a report summarizing the history of known carbon tetrachloride ground water contamination in the city of Freeman (Ref. 13). This report also identified businesses and features that were considered potential sources for this contamination (Ref. 13, p. 2). Of these potential sources, only two were located upgradient of the Freeman School District out-of-use well; these being the Grain Handling Facility at Freeman and the Old Freeman Clay Pit (see Figure 2).

EPA conducted soil sampling to determine whether the other possible source of carbon tetrachloride, the Old Freeman Clay Pit, was contributing contamination to the Site. Page 38 of the HRS documentation record at proposal, states that the Ecology Status Report:

speculated that the Old Freeman Clay Pit may have been used for dumping or illegal disposal (Ref. 13, p. 3). Although no evidence of this use has been located in available documents, three upgradient background borings (HA01, HA02, and HA03) were placed between an area of ponded water at the Old Freeman Clay Pit and the Grain Handling Facility at Freeman during the EPA SI in order to determine whether potential source(s) on the Old Freeman Clay Pit property may be contributing to carbon tetrachloride ground water contamination in the area (Ref. 4, pp. 38 and 64 [Figure 3-2]; Ref. 6, p. 15).

The ground water background samples taken between the Old Freeman Clay Pit and the soil source located at the grain facility property did not indicate the presence of an upgradient source of carbon tetrachloride. This is discussed on page 38 of the documentation record at proposal:

One subsurface soil sample was collected from each boring (Ref. 6, pp. 17, and 18). The samples were collected from 13 to 13.5 feet bgs, 2 to 2.5 feet bgs, and 8.5 to 9 feet bgs (Ref. 6, pp. 17 and 18). As indicated in Section 2.2 of this document, soil matrices at these locations were similar to release sample matrices; sample chain-of-custody was maintained, samples were handled in a similar fashion to release samples (i.e., immediately placed in coolers with ice, aliquots for fixed laboratory analysis were frozen to extend the technical holding times, etc.), samples were collected using a decontaminated stainless steel hand auger, samples were analyzed using the same analytical methods as release samples, and analytical data from these samples were validated using the same protocols as the release samples.

No VOCs, including carbon tetrachloride and chloroform, were detected in these samples (see Table 2 for analytical results and reference citations). A source of carbon tetrachloride or chloroform was not located at the Old Freeman Clay Pit.

The HRS documentation record at proposal documents EPA's broad review of other possible sources that could contribute to the contamination at the Site. The Ecology Status Report (Reference 13 of the HRS documentation record at proposal) reviewed a total of 10 possible sources including the grain facility. The report found none of the other possible sources had a high potential to be a source. This information combined with the soil samples taken to screen for any contamination coming from the Old Freeman Clay Pit indicates that no other possible off-site sources were likely to be contributing all of the carbon tetrachloride found in the release wells.

In conclusion, the HRS documentation record at proposal properly establishes attribution, for HRS purposes, because it associated carbon tetrachloride in the release with the Site source and found a lack of plausible other possible off-site sources.

The following subsections of this support document address each of the issues identified above:

- 3.7.1 Adequacy of the SI Report to Support Association of Site Contamination with the Grain Facility
- 3.7.2 Attributing the Significant Increase in Carbon Tetrachloride in the Aquifer to the Soil Source
- 3.7.3 Contaminant Transport at the Freeman School District Well (W26)
- 3.7.4 Presence of an Illegal Dump
- 3.7.5 Adequacy of Investigation of Alternative Sources
- 3.7.6 Ground Water Flow Direction

3.7.1 Adequacy of the SI Report to Support Association of Site Contamination with the Grain Facility

Comment: CHS and Mr. Pettibone questioned the adequacy of the documentation presented in the SI report to support attribution of the carbon tetrachloride in the school wells to the Site. Mr. Pettibone asserted that the SI does not determine whether carbon tetrachloride was used at the grain facility from 1955 to 1986. CHS commented that the soil data in the SI report does not conclusively demonstrate that the grain facility is the source of the carbon tetrachloride detected in soil samples at the grain facility or in ground water samples collected from area water supply wells.

Response: The lack of information regarding the use of carbon tetrachloride at the grain facility in the SI does not conclusively document that carbon tetrachloride was not used or released at the grain facility, as Mr. Pettibone suggests. Additionally, the lack of information for this time period at the grain facility does not demonstrate that carbon tetrachloride was never used during that time period, nor does it establish that it was not used during other time periods. It simply indicates that use of fumigants at the grain facility during this timeframe is currently unknown. Regardless of whether carbon tetrachloride was used at the grain facility between 1955 and 1986, the carbon tetrachloride is associated with the contaminated soil source located at the facility property as discussed in section 3.7, Observed Release: Attribution, of this support document.

HRS Section 3.1.1, *Observed release*, requires that at least some portion of the significant increase in contaminant levels in the aquifer being evaluated is attributable to the site to document an observed release to the aquifer:

Establish an observed release to an aquifer by demonstrating that the site has released a hazardous substance to the aquifer. Base this demonstration on either:

- Direct Observation— . . .
- Chemical analysis—an analysis of ground water samples from the aquifer indicates that the concentration of hazardous substance(s) has increased significantly above the background concentration for the site (see section 2.3). Some portion of the significant increase must be attributable to the site to establish the observed release.

The HRS documentation record at proposal on pages 15-16 establishes this by first showing that carbon tetrachloride is associated with the subsurface soil located at the grain facility property based on sampling:

In April 2014, subsurface soil samples were collected at the Grain Handling Facility at Freeman as a component of the EPA SI (Ref. 4, p. 41). A Sampling and Quality Assurance Plan (SQAP) was developed prior to conducting sampling work which outlined the numbers and types of samples to be collected and the analytical methods to be applied (Ref. 5, pp. 32 and 33). Sampling techniques employed were in accordance with the SQAP (Ref. 4, p. 29). Deviations from the SQAP were approved by the EPA and were documented in a Sample Plan Alteration Form (Ref. 4, p. 29).

A total of 14 borings (SB01 through SB14) were drilled at the Grain Handling Facility at Freeman using a hydraulic direct-push sampling system and subsurface samples were collected for the purpose of determining whether carbon tetrachloride was present in subsurface soils near this operation (Ref. 4, pp. 30, 41, and 64 [Figure 3-2]). Drilling activities were initiated near the grain elevator and scale house since these features appeared to be the most likely locations for historic pesticide application to grain, and are often associated with the presence of carbon tetrachloride contamination at facilities where this compound was used (Ref. 4, p. 41; Ref. 17, p.

2). Between two and seven grab subsurface soil samples were collected from each boring (Ref. 4, pp. 70, 71, and 72).

...

Analytical results indicate the presence of a subsurface soil source of carbon tetrachloride and chloroform contamination at the Grain Handling Facility at Freeman (see Section 2.2.2, Table 1 for specific sample numbers, sample depths, and reference citations). Subsurface soil samples that define the area of contaminated soil were used to develop a volume of contaminated soil. This volume is estimated to be 1,345 cubic yards (see Section 2.4.2.1.3).

It is not necessary to show that the grain facility used carbon tetrachloride for a specific period of time. Although this information would be useful in establishing attribution, it is not required to show that at least some portion of the significant increase in carbon tetrachloride found in the release wells is attributable to the Site, specifically the Site soil source.

Pages 35-38 of the HRS documentation record at proposal contains a discussion of the steps taken at this site to investigate other possible sources to determine whether the release of carbon tetrachloride is due in part to the soil source, and not due entirely from an off-site source not identified in the HRS package. As quoted fully in section 3.7.5, Adequacy of Investigation of Alternative Sources, of this support document, the Washington State Department of Ecology reviewed other potential sources of carbon tetrachloride and documented in its report that the grain facility was the only highly likely source of carbon tetrachloride in the vicinity of the Site. EPA also conducted Site specific sampling to screen for upgradient sources. As stated on page 38 of the HRS documentation record at proposal:

No VOCs, including carbon tetrachloride and chloroform, were detected in these [up-gradient screening samples]. A Source of carbon tetrachloride or chloroform was not located at the Old Freeman Clay Pit.

The HRS documentation record at proposal establishes attribution by showing that some portion of the significant increase in carbon tetrachloride (and chloroform) identified in ground water samples from wells DW01 and DW02 is attributable to the Site—specifically soil Source 1—consistent with the HRS. And, results of the soil samples taken between the Old Freeman Clay Pit and the soil source do not indicate that carbon tetrachloride could be migrating from Old Freeman Clay Pit to the contaminated wells.

Additionally, no other likely possible sources other than the grain facility are known to exist within the vicinity of the Site. (See also section 3.7.5, Adequacy of Investigation of Alternative Sources, of this support document.)

It is important to note that the SI report was not the only source of information used to calculate the HRS score for this Site. The HRS package consists of numerous references that were used to establish that at least some portion of the significant increase in carbon tetrachloride found in the release wells is attributable to the Site, specifically the Site soil source. These references include various supporting documents including geologist and chemist field logbooks, sampling plans, U.S. Geological Survey information, site-specific contaminated ground water status reports, scientific reports on the use of fumigants at grain handling facilities, hydrogeological reports of the area surrounding the Site, the Washington State Department of Ecology *Freeman School Wells, Contaminated Ground Water Status Report*, the *Feasibility Evaluation, Production Well Evaluation – Carbon Tetrachloride Contamination, Freeman School District, Freeman, Washington, and other references*.

CHS similarly misunderstands the attribution analysis required by the HRS as a screening tool, by commenting that “the SI report does not conclusively demonstrate that the grain facility is the source of the carbon tetrachloride detected in the soil samples taken at the grain facility of in ground water samples taken from area

water supply wells.” As discussed above, HRS Section 3.1.1, *Observed release*, requires some portion of the significant increase of carbon tetrachloride found in the release wells be attributed to the Site, and therefore, in this case, the Site soil source. This does not require EPA to establish that the source attribution show that no part of the contamination has any other possible origin. Rather, it requires that at least some portion of the contamination in the aquifer is attributable to the source being scored at the Site. As discussed above and in section 3.7, Observed Release: Attribution, of this support document, attribution has been established for this Site.

These comments results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.7.2 Attributing the Significant Increase in Carbon Tetrachloride in the Aquifer to the Soil Source

Comment: CHS commented that the soil and ground water data collected are insufficient to determine the source of carbon tetrachloride detected in ground water wells on the Freeman School District Complex. More specifically, CHS submitted comments suggesting that ground water characteristics at the Site may be impacting soil source sample analytical results and suggesting that carbon tetrachloride in ground water is not from the soil source identified. Specifically:

- CHS stated that soil samples with 30–40 percent moisture content suggests that soil samples were fully saturated, which may indicate that a perched or water-bearing zone may exist within the unconsolidated soil above the basalt, affecting soil analytical results.
- CHS stated that soil saturation suggests that migration of dissolved-phase carbon tetrachloride may be heavily influenced by the hydraulic characteristics of the shallow water-bearing zone.
- CHS asserted that additional characterization of hydrogeological conditions should be conducted before a site model is developed to assist in site cleanup. Specifically, the HRS documentation record at proposal does not discuss the possibility of a shallow ground water layer existing within the upper unconsolidated materials.
- CHS argued that it is critical to further characterize any such shallow water-bearing zone to identify the source of carbon tetrachloride and determine the contaminant migration pathways.
- CHS suggested that carbon tetrachloride may be present at deeper depths than identified because it has a relatively low affinity to sorb to soil, and contamination may exist primarily in the dissolved phase in soil pore water or ground water in saturated soil found at approximately 15 feet bgs.
- CHS concluded that low concentrations of carbon tetrachloride detected in the soil samples are not indicative of the presence of nonaqueous-phase liquid.

Response: The data presented in the HRS documentation record at proposal determines the source of carbon tetrachloride found in the Freeman School District Complex supply wells, for HRS scoring purposes. Even if the carbon tetrachloride is in a soil from perched water, as is suggested by CHS’s comments, this does not mean that it did not migrate there due to a release from the grain facility. The HRS documentation record at proposal also establishes that at least some portion of the significant increase in the hazardous substances found in the observed release wells located at the Freeman School Complex is attributable to the soil source of carbon tetrachloride located at the Site.

As discussed above in section 3.7, Observed Release: Attribution, of this support document, HRS Section 3.1.1, *Observed release*, requires that at least some portion of the significant increase in contaminant levels in the aquifer being evaluated is attributable to the site to document an observed release to the aquifer. The HRS documentation record at proposal establishes that the hazardous substance (carbon tetrachloride and chloroform)

found in the observed release wells located at the Freeman School Complex is associated with the soil source located at the grain facility property. Sample data from the soil source at the Site shows that carbon tetrachloride and chloroform, a degradation product of carbon tetrachloride, exist in the soil source at elevated levels greater than the background concentrations. Page 15–16 of the HRS documentation record at proposal provide information showing that carbon tetrachloride is associated with the subsurface soil located at the grain facility property based on sampling. The existence of a perched water table would not negate this finding for several reasons.

First, the presence of the soil in a perched water zone does not prevent identification of a contaminated soil source. HRS Section 1.1, *Definitions*, defines a source as:

Any area where a hazardous substance has been deposited, stored, disposed, or placed, plus those soils that have become contaminated from migration of a hazardous substance.

The definition specifically states that the source includes “[a]ny area . . . plus those soils that have become contaminated from migration of a hazardous substance.” (emphasis added). It does not exclude from this definition soils that may be from a perched water zone. Section 3.6, *Source*, of this support document demonstrates that the soil contamination at the Site meets these requirements.

Second, contrary to CHS’s comments, the soil sample moisture content does not conclusively indicate whether a perched water table exists or does not exist under the Site. CHS commented that soil samples with 30–40 percent moisture content suggest that soil samples were fully saturated, which may indicate that perched or water-bearing zone may exist within the unconsolidated soil above the basalt affecting soil analytical results. Perched water would typically result in soil moisture content greater than 30–40 percent. If a perched water table did exist at the sample locations during the SI sampling event, the soil boring log would indicate that water was encountered at the sample locations. Yet, soil borings taken during the soil investigation at the Site did not document any water that would indicate the existence of a perched aquifer within the horizons from which the soil borings were collected. Field logs from the sampling event do not indicate any such soil was encountered. (See pp. 365–391 of the SI report (Reference 4 of the HRS documentation record at proposal). This indicates that a perched water table likely did not exist at the time of the SI sampling event.

Third, as suggested by CHS, migration of carbon tetrachloride may be influenced by hydraulic characteristics of any such water-bearing zone. However, CHS incorrectly implies that such an additional migration route would indicate that a source of carbon tetrachloride must exist upgradient of the grain facility. Even if such a perched water table existed, and therefore a potential additional migration pathway, that carbon tetrachloride was not found in upgradient background samples that were also from the top of the clay layer, indicates that the origin of the carbon tetrachloride is not from a source upgradient of the background samples. Contamination would be expected to be seen within the same horizon in the samples taken at both background locations. The results of the soil testing at the Old Freeman Clay Pit do not indicate that carbon tetrachloride could be migrating from the only known upgradient possible source, Old Freeman Clay Pit, to the contaminated wells. As discussed fully in Section 3.7.4, *Presence of an Illegal Dump*, of this support document, the HRS documentation record at proposal explained that there is no indication that the Old Freeman Clay Pit is a source of the carbon tetrachloride or chloroform found in observed release wells DW01 and DW02. Therefore, CHS’s comment does not demonstrate the attribution to the Site source is incorrect, nor does it evidence that the contamination is from another possible source.

CHS comments that additional characterization of hydrogeological conditions, including any possible shallow ground water layer, is needed before any future remedial action is taken at the Site. EPA agrees that additional characterization of the hydrogeological conditions may need to be conducted before any future remedial actions are taken at the Site. Any such investigations could include characterizing other possible sources and migration pathways that may exist. The CERCLA framework anticipates that subsequent government actions may be

needed to conduct possible Site remedial action, and these actions will be attended by all appropriate procedural safeguards. The primary purpose of the NPL is stated in the legislative history of CERCLA:

The priority list serves primarily informational purposes, identifying for the States and the public those facilities and sites or other releases which appear to warrant remedial actions. Inclusion of a facility or site on the list does not in itself reflect a judgment of the activities of its owner or operator, it does not require those persons to undertake any action, nor does it assign liability to any person. Subsequent government action in the form of remedial actions or enforcement actions will be necessary in order to do so, and these actions will be attended by all appropriate procedural safeguards.

Report of the Committee on Environment and Public Works, Senate Report No. 96-848, 96th Cong., 2d Sess. 60 (1980).

The NPL, therefore, is primarily an informational and management tool. The identification of a site for the NPL is intended primarily to guide EPA in determining which sites warrant further investigation to assess the nature and extent of the human health and environmental risks associated with the site and to determine what CERCLA-financed remedial action(s), if any, may be appropriate.

Last, CHS's assertion that the levels of carbon tetrachloride detected in the soil samples greater than 15 feet bgs (due to the compounds alleged low affinity to sorb to soil) means that the soil samples are not indicative of the presence of nonaqueous-phase liquid is speculation. Even if it had been demonstrated that the soil samples did not contain carbon tetrachloride in liquid state, this would not impact EPA's identification of a soil source containing carbon tetrachloride at the Site soil source. As discussed in section 2.6, Source, of this support document, the HRS documentation record at proposal establishes that carbon tetrachloride exists in the soil samples taken at the Site. Whether the carbon tetrachloride is in these samples because the compound has sorbed to the solid portion of soil media or is in the moisture within the sample has no impact on the way the HRS scores the release. Soil is a mixture of dirt (the solid portion), a biological portion (bacteria and other microorganisms), moisture, and even air in unsaturated pores. The carbon tetrachloride is likely to be partitioned in any or all of these portions of soil.

Therefore, these comments results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.7.3 Contaminant Transport at the Freeman School District Well (W26)

Comment: Mr. Pettibone and CHS commented that the Freeman School District Well (W26) may be a conduit for transport of carbon tetrachloride to the aquifer. Mr. Pettibone and CHS suggested that EPA should further investigate the out-of-use Freeman School District well and soil surrounding the well. Mr. Pettibone stated that no soil borings were completed at the out-of-use Freeman School District well (W26) where the highest concentration of carbon tetrachloride was detected, with a reading of 48.1 micrograms per liter ($\mu\text{g/l}$), a concentration close to 3 times the MCL. Mr. Pettibone also suggested that soil borings should be conducted at this site and the lack of such soil sampling is one reason that the SI report is incomplete and should not be used to score the Site. CHS suggested that this well may be acting as a "conduit for shallow ground water to migrate to deeper water-bearing zones in which the water supply wells are completed." CHS also suggests this well should be sealed and cased, or decommissioned, to limit any direct hydraulic connection between shallow and deeper water-bearing zones.

Response: As shown in section 3.7, Observed Release: Attribution, of this support document, and its subsections, some portion of the significant increase in carbon tetrachloride and chloroform identified in ground water samples from wells DW01 and DW02 is attributable to the Site—specifically soil source—consistent with the HRS. The detection of carbon tetrachloride at well W26 and the possibility of this well acting as a contamination conduit do

not contradict this attribution. The HRS does not require that the exact location of the migration route from a source to an observed release sample from a well be shown.

As noted in section 3.7, Observed Release: Attribution, of this support document, the ground water pathway section of the HRS states the requirement for attribution in HRS Section 3.1.1, *Observed release*:

Establish an observed release to an aquifer by demonstrating that the site has released a hazardous substance to the aquifer. Base this demonstration on either:

- Direct Observation— . . .
- Chemical analysis—an analysis of ground water samples from the aquifer indicates that the concentration of hazardous substance(s) has increased significantly above the background concentration for the site (see section 2.3). Some portion of the significant increase must be attributable to the site to establish the observed release.

Attribution to the “site” is considered within the context of the meaning of “site” as defined by the HRS. HRS Section 1.1, *Definitions*, defines “site” as:

Area(s) where a hazardous substance has been deposited, stored, disposed, or placed, or has otherwise come to be located. Such areas may include multiple sources and may include the area between sources.

The HRS does not prescribe a particular methodology for establishing attribution for an observed release by chemical analysis. As documented in the HRS documentation record at proposal, based on information provided on pages 35-38 of the HRS documentation record at proposal, and as further supported by section 3.7, Observed Release: Attribution, of this support document, and its subsections, at least some portion of the significant increase of carbon tetrachloride and chloroform in the observed release wells at the Freeman School Complex is attributable to the soil source of carbon tetrachloride located at the grain facility property.

Regarding the CHS suggestion that well W26 acts as a conduit for contaminant transport from shallow ground water to deeper ground water, such a ground water migration route does not negate the attribution of the significant increase in ground water hazardous substances to the Site established in the HRS documentation record at proposal. The possibility that the well W26 location might act as a channel facilitating the sinking of contaminants during their migration through the aquifer or via movement as a dissolved substance in sinking ground water is not inconsistent with this attribution; and, in fact, this could be one of the routes taken by contamination between the point at which soil contaminants enter ground water and their downgradient detection in observed release wells DW01 and DW02. On pages 27–28 of the SI report (Reference 4 of the HRS documentation record at proposal), in discussing well W26 states:

The well casing was observed to be loose during the site visit and, given this situation, it could be broken. If contamination is present at the Cenex Harvest States grain handling facility, it is possible it is migrating southwest to the out-of-use Freeman School District well, then entering the well either via breaches in the casing, or by flowing along the casing to the drinking water aquifer.

Concerning the suggested possibility that soils near well W26 may constitute an additional source of contamination, as explained in section 3.7.5, Adequacy of Investigation of Alternative Sources, of this support document, EPA conducted a broad review of numerous other potential sources of carbon tetrachloride and the resulting information does not indicate other highly likely sources exist. And, regarding the comment that the SI should have included soil samples at that location (or that such samples should be collected in the future), section 3.6.2, Association of Carbon Tetrachloride with the Site Soil Source, of this support document, explains that:

- the HRS documentation record at proposal provided ample reason for the SI to focus on sample collection at the Grain Handling Facility at Freeman, and this focus was confirmed in the detection of soil contamination at the Grain Handling Facility at Freeman;
- this focus was based on a review of background information and interviews with area representatives and regulatory agencies; and,
- relating to suggested further points of investigation, such as the soil near well W26, additional investigation may be conducted at sites placed on the NPL prior to any remedial actions as part of a separate step in the Superfund process. (This is consistent with the HRS as a screening tool that uses limited resources to determine whether a site should be placed on the NPL for possible Superfund response.)

Furthermore, given the proximity of well W26 to the soil source—just downgradient and across State Highway 27 from the grain facility at Freeman as shown in Figure 3 of the HRS documentation record at proposal—it is possible that the May 30, 2012, detection of 48.1 µg/l carbon tetrachloride in well W26 ground water is the result of migration of carbon tetrachloride from Source 1 contaminated soil. And, even if sampling showed soil contamination at the location of well W26, it could be present there from migration of the release of contamination from Source 1 contaminated soil.

On the subject of the comment that well W26 should be sealed, cased, or decommissioned, considerations regarding remedy selection are not factors in the decision to list a site on the NPL and these decisions are not made at the listing stage. Further investigation may be conducted at later stages in the Superfund process to determine if any such steps are necessary. Consistent with CERCLA, EPA has in place an orderly procedure for identifying sites where releases of substances addressed under CERCLA have occurred or may occur, placing such sites on the NPL, evaluating the nature and extent of the threats at such sites, responding to those threats, and deleting sites from the NPL. The purpose of the initial two steps is to develop the NPL, which identifies for the States and the public those sites that appear to warrant remedial action (56 FR 35842, July 29, 1991). The evaluation or remedial investigation/feasibility study (RI/FS) phase involves on-site testing to assess the nature and extent of the public health and environmental risks associated with the site and to determine what CERCLA-funded remedial actions, if any, may be appropriate. After a period of public comment, EPA responds to those threats by issuing a Record of Decision which selects the most appropriate alternative. The selected remedy is implemented during the remedial design/remedial action phase. Finally, the site may be deleted from the NPL when EPA determines that no further response is appropriate.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.7.4 Presence of an Illegal Dump

Comment: Mr. Pettibone's submitted comment suggests that an illegal dump located near the Freeman Grain Facility could be a possible source of carbon tetrachloride contamination at the Site. Mr. Pettibone stated that a dump spot is located at the Freeman Clay Pit and alleges it contains an "old 55 gallon drums, refrigeration appliances, various other metal containers" and a container of dry cleaner solution. Mr. Pettibone stated he believes that a container of "Aunt Sue's French Dry Cleaner" solvent contained carbon tetrachloride and insinuated that this alleged dump may be a potential source of carbon tetrachloride.

Mr. Pettibone stated that although the illegal dump spot is mentioned in the SI report, the following issues are not addressed in the HRS documentation record at proposal:

- No water samples were obtained from the pond adjacent to the dump spot nor were soil borings taken from the dump spot.

- Soil borings taken on the Freeman Clay Pit property are not from the portion of the clay pit where illegal dumping occurred.

Response: As shown in section 3.7, Observed Release: Attribution, of this support document, and its subsections, some portion of the significant increase in carbon tetrachloride and chloroform identified in ground water samples from wells DW01 and DW02 is attributable to the Site—specifically soil Source 1—consistent with the HRS. And, results of the soil testing at the Old Freeman Clay Pit do not indicate that carbon tetrachloride could be migrating from Old Freeman Clay Pit to the contaminated wells because no contamination was detected in the screening soil samples. Speculation of another source in the area of the release substances does not negate the attribution of at least some portion of the significant increase to the documented site soil source.

As noted in section 3.7, Observed Release: Attribution, of this support document, the ground water pathway section of the HRS states the requirement for attribution. HRS Section 3.1.1, *Observed release*, states:

Establish an observed release to an aquifer by demonstrating that the site has released a hazardous substance to the aquifer. Base this demonstration on either:

- Direct Observation— . . .
- Chemical analysis—an analysis of ground water samples from the aquifer indicates that the concentration of hazardous substance(s) has increased significantly above the background concentration for the site (see section 2.3). Some portion of the significant increase must be attributable to the site to establish the observed release. (emphasis added).

Attribution to the “site” is considered within the context of the meaning of “site” as defined by the HRS. Section 1.1, *Definitions*, defines “site” as:

Area(s) where a hazardous substance has been deposited, stored, disposed, or placed, or has otherwise come to be located. Such areas may include multiple sources and may include the area between sources.

As documented in the HRS documentation record at proposal, based on information provided on pages 35–38 of the HRS documentation record at proposal, and as further supported by section 3.7, Observed Release: Attribution, of this support document, and its subsections, at least some portion of the significant increase of carbon tetrachloride and chloroform in the observed release wells at the Freeman School Complex is attributable the soil source of carbon tetrachloride located under the grain facility property.

Pages 37–38 of the HRS documentation record at proposal discuss that there is no indication that the Old Freeman Clay Pit is a source of the carbon tetrachloride or chloroform found in observed release wells DW01 and DW02:

In August 2012, the Washington State Department of Ecology (Ecology) completed a report summarizing the history of known carbon tetrachloride ground water contamination in the city of Freeman (Ref. 13). This report also identified businesses and features that were considered potential sources for this contamination (Ref. 13, p. 2). Of these potential sources, only two were located upgradient of the Freeman School District out-of-use well; these being the Grain Handling Facility at Freeman and the Old Freeman Clay Pit (see Figure 2). The report speculated that the Old Freeman Clay Pit may have been used for dumping or illegal disposal (Ref. 13, p. 3). Although no evidence of this use has been located in available documents, three upgradient background borings (HA01, HA02, and HA03) were placed between an area of ponded water at the Old Freeman Clay Pit and the Grain Handling Facility at Freeman during the EPA SI in order to determine whether potential source(s) on the Old Freeman Clay Pit property may be

contributing to carbon tetrachloride ground water contamination in the area (Ref. 4, pp. 38 and 64 [Figure 3-2]; Ref. 6, p. 15).

One subsurface soil sample was collected from each boring (Ref. 6, pp. 17, and 18). The samples were collected from 13 to 13.5 feet bgs, 2 to 2.5 feet bgs, and 8.5 to 9 feet bgs (Ref. 6, pp. 17 and 18). As indicated in Section 2.2 of this document, soil matrices at these locations were similar to release sample matrices; sample chain-of-custody was maintained, samples were handled in a similar fashion to release samples (i.e., immediately placed in coolers with ice, aliquots for fixed laboratory analysis were frozen to extend the technical holding times, etc.), samples were collected using a decontaminated stainless steel hand auger, samples were analyzed using the same analytical methods as release samples, and analytical data from these samples were validated using the same protocols as the release samples.

No VOCs, including carbon tetrachloride and chloroform, were detected in these samples (see Table 2 for analytical results and reference citations). A source of carbon tetrachloride or chloroform was not located at the Old Freeman Clay Pit. (emphasis added).

Furthermore, the commenter only presents unfounded assertions that the Freeman Clay Pit or the illegal dump spot are in fact contributing carbon tetrachloride at the Site, and has not provided any specific information that would call into question the attribution of the significant increase in carbon tetrachloride and chloroform identified in wells DW01 and DW02 ground water samples to the Site soil Source 1.

Additionally, even if these areas are contributing to some portion of the carbon tetrachloride found in the contaminated release wells, this would not negate that the soil source identified at the grain facility is contributing to some portion of the significant increase in carbon tetrachloride found in the water wells. As stated in the CTS Corporation case opinion, EPA “need not exclude all other possible sources of contamination,” rather it need only examine relevant data and show that the “property contributed some portion of the contamination.” *CTS Corp. v. Envtl. Prot. Agency & Gina McCarthy*, 759 F.3d 52, 60 (D.C. Cir., 2014). Given the steps EPA took to investigate possible contamination from the Old Freeman Clay Pit, no further efforts are needed at this time.

Finally, as further discussed in section 3.3, Extent of Site, of this support document, the extent of the Site, as delineated in the HRS documentation record at proposal, does not necessarily represent a description of the final Site dimensions. In investigation carried out as a later step in the Superfund process, EPA may find that the contamination has spread further than previously estimated, and the site definition may be correspondingly expanded (and could include an illegal dump spot associated with the Freeman Clay Pit as an additional possible source of the release to the aquifer, if information generated by later investigation finds Site-related contamination warranting such expansion).

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.7.5 Adequacy of Investigation of Alternative Sources

Comment: CHS and Mr. Pettibone commented that EPA did not investigate all nearby possible sources that could have contributed to the release of carbon tetrachloride at the Site.

- Mr. Pettibone stated that the SI report did not investigate the history of businesses from the 1800’s and any related use of carbon tetrachloride.
- Mr. Pettibone stated that EPA also failed to investigate historical lighting methods, utilities, and similar historical activities to determine other possible sources of carbon tetrachloride.

- CHS stated that the Ecology Status Report reference to the HRS documentation record at proposal did not identify several facilities that could have handled carbon tetrachloride including: a 1916 garage, a blacksmith shop that sold John Deere machinery, and a decommissioned railroad grade adjacent to the Freeman School District water supply well.

Response: A broad review of numerous other potential sources of carbon tetrachloride was conducted and the resulting information does not indicate other highly likely sources exist. This included a broad review of potential sources and site specific sampling. Based on the results of this report and sampling, EPA had sufficient information to evaluate the Site for HRS scoring purposes.

The HRS does not require any particular method for evaluating other possible sources of hazardous substances found at a site. Rather, the HRS requires EPA show that at least some portion of the significant increase of the hazardous substances in the aquifer is attributable to the Site (see HRS sections 3.1.1, *Observed release*, and 2.3, *Likelihood of release*).

To meet this requirement, EPA conducts a site-specific analysis at each site to determine attribution of the significant increase in hazardous substances to the site. This analysis generally has two steps. First, determine whether the hazardous substances in the release are associated with the sources at the site; second, investigate other possible sources to determine if the significant increase is due to a source in the area of the site. EPA conducted this analysis at this site and found that the evidence in the HRS documentation record at proposal establishes that at least some portion of the significant increase of carbon tetrachloride in the observed release wells at the Freeman School Complex is attributable to the Site soil source located at the grain facility property.

At this Site, steps were taken to investigate other possible sources to determine if the release of carbon tetrachloride is due in part to the soil source, and not due entirely from an off-site source. First, in August 2012, the Washington State Department of Ecology reviewed other possible sources of carbon tetrachloride (the results are outlined in Reference 13, the Ecology Status Report). Second, EPA conducted site-specific sampling to screen for upgradient sources. Third, EPA conducted soil sampling to determine whether the other possible source of carbon tetrachloride, the Old Freeman Clay Pit, was contributing contamination to the Site.

The Ecology Status Report found that only two possible sources were located upgradient of the Freeman School District out-of-use well (the grain facility at Freeman and the Old Freeman Clay Pit), and that the grain facility was the only highly likely source of carbon tetrachloride. Page 37 of the HRS documentation record at proposal states in part:

The town of Freeman has few residences and is dominated by the Freeman School District campus (Ref. 3; Figure 1). The elementary, middle and high schools of the district are situated in three separate buildings on this campus (Ref. 13, p. 1). The Freeman Store is present on the north end of town (Figure 2). A former clay borrow pit known as the Old Freeman Clay Pit is located approximately 0.5 mile northeast of the Grain Handling Facility at Freeman (Ref. 4, pp. 15 and 62 [Figure 2-2]; Ref. 13, p. 8 [Figure 2]). The Old Freeman Clay Pit is situated on property currently owned by Mutual Materials Company (Figure 2; and Ref. 4, p. 15; Ref. 13, p. 8 [Figure 2]; Ref. 15, pp. 1 and 2). Beyond these uses, land near Freeman is primarily used for agricultural production (Ref. 4, p. 15).

In August 2012, the Washington State Department of Ecology (Ecology) completed a report summarizing the history of known carbon tetrachloride ground water contamination in the city of Freeman (Ref. 13). This report also identified businesses and features that were considered potential sources for this contamination (Ref. 13, p. 2). Of these potential sources, only two were located upgradient of the Freeman School District out-of-use well; these being the Grain Handling Facility at Freeman and the Old Freeman Clay Pit (see Figure 2).

As shown on pages 2–3 of Reference 13, Ecology Status Report, of the HRS documentation record at proposal, (referenced above as the Washington State Department of Ecology report) also identified businesses and features that were considered possible sources for this contamination, stating in part:

A confirmed source of the carbon tetrachloride contaminating the School District and Marlow wells has not been identified. However, there are a number of potential facilities that have been preliminarily identified and assessed as potential sources.

The Ecology Status Report established the following criteria for reviewing and categorization of potential sources as a high or medium potential source. As shown on page 3 of Reference 13 of the HRS documentation record at proposal, these considerations included:

- The association of tetrachloride with a particular industry or process. Historical uses of carbon tetrachloride include metal degreasing, a grain fumigant, a solvent for oils and fats, and a cleaning agent for machinery and electrical equipment.
- A record of, or reasonable opportunity for, improper waste disposal or storage practice. Historically, much ground water contamination has been the result of improper waste disposal and storage. Source sites have included septage lagoons, unregulated industrial and community garbage dumps, and isolated excavations and mines.
- The character of a hypothetical carbon tetrachloride release would be such as to contaminate the regional aquifer. Based upon the properties and environmental fate and transport of carbon tetrachloride, it is speculated that a significant release of the compound is necessary to persistently contaminate ground water. Scenarios include, but are not limited to, a large one-time release or a continuous but smaller release.

As shown on page 4 of Reference 13 of the HRS documentation record at proposal, the sources of information and data used for the report included the following:

- Correspondence from and conversations with WA Dept of Health staff.
- Records on file with the WA Dept of Ecology, Eastern Regional Office, Spokane.
- Databases maintained by the WA Dept of Ecology.
- Conversations with Freeman School District staff.
- A site visit conducted on July 24, 2012.

The report reviewed four high and medium possible sources and several other facilities located near the Site. As indicated on page 3, the report judged that these other potential sources have low potential for being a source “[b]ecause of the apparent small scale and character of site activities.” Page 4 of the report states that these low potential sources include:

- Freeman School District - UST’s, petroleum.
- Freeman School District – NPDES to surface water permit.
- Freeman Store - UST associated with a retail service station, petroleum
- Historic brick kiln located south and topographically down gradient of the impacted wells.
- State Highway right-of-way.
- Marlow residence, former shops and out-buildings.

Of these possible sources, only two are located upgradient of the Freeman School District out-of-use well: the grain facility at Freeman and the Old Freeman Clay Pit. EPA conducted soil sampling to determine whether the other possible source of carbon tetrachloride, the Old Freeman Clay Pit, was contributing contamination to the Site. Page 38 of the HRS documentation record at proposal states that the August 2012 Washington State Department of Ecology report:

speculated that the Old Freeman Clay Pit may have been used for dumping or illegal disposal (Ref. 13, p. 3). Although no evidence of this use has been located in available documents, three upgradient background borings (HA01, HA02, and HA03) were placed between an area of ponded water at the Old Freeman Clay Pit and the Grain Handling Facility at Freeman during the EPA SI in order to determine whether potential source(s) on the Old Freeman Clay Pit property may be contributing to carbon tetrachloride ground water contamination in the area (Ref. 4, pp. 38 and 64 [Figure 3-2]; Ref. 6, p. 15).

The ground water background samples collected between the Old Freeman Clay Pit and the soil source located at the grain facility property did not indicate the presence of an upgradient source of carbon tetrachloride. This is discussed on page 38 of the HRS documentation record at proposal:

One subsurface soil sample was collected from each boring (Ref. 6, pp. 17, and 18). The samples were collected from 13 to 13.5 feet bgs, 2 to 2.5 feet bgs, and 8.5 to 9 feet bgs (Ref. 6, pp. 17 and 18). As indicated in Section 2.2 of this document, soil matrices at these locations were similar to release sample matrices; sample chain-of-custody was maintained, samples were handled in a similar fashion to release samples (i.e., immediately placed in coolers with ice, aliquots for fixed laboratory analysis were frozen to extend the technical holding times, etc.), samples were collected using a decontaminated stainless steel hand auger, samples were analyzed using the same analytical methods as release samples, and analytical data from these samples were validated using the same protocols as the release samples.

No VOCs, including carbon tetrachloride and chloroform, were detected in these samples (see Table 2 for analytical results and reference citations). A source of carbon tetrachloride or chloroform was not located at the Old Freeman Clay Pit.

Therefore, EPA conducted a sufficient review of other possible sources and did not find any off-site sources to be contributing all of the contaminant release at the Site.

Mr. Pettibone's comments state that EPA did not investigate historical businesses from the 1800's, including historical lighting methods and utilities. Similarly, CHS commented that EPA did not investigate a 1916 garage, a blacksmith shop that sold John Deere machinery, and a decommissioned railroad grade adjacent to the Freeman School District water supply well as possible sources. The HRS does not require, nor is it necessary, to review all historical possible sources that ever existed in an area when researching other likely possible sources. As discussed above, the Ecology Status Report reviewed numerous other possible sources, including currently existing and historical possible sources, and EPA conducted site-specific sampling that found no other upgradient source was highly likely. Neither these investigations nor any information submitted by commenters supports the assertion that any of these alleged possible historical sources are likely to have contributed to the contamination identified in the Freeman School District Complex wells. Given the steps EPA took to investigate other possible sources, no further efforts are needed at this time.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.7.6 Ground Water Flow Direction

Comment: CHS and Mr. Pettibone questioned the accuracy of the ground water flow direction and gradient estimates derived from modeling conducted during the Feasibility Evaluation. Mr. Pettibone stated that ground water flow models are only as accurate as the data used to construct them, and implied that a change in the ground water flow model results could indicate that the soil Source 1 contamination originated at the Marlow well (out-of-use Freeman School District well W26) location. CHS made the following assertions related to the ground water flow direction and gradient modeling:

- No quantitative data, such as ground water elevations, were provided to support the ground flow direction and gradient used to characterize the ground water at and near the Freeman School District Complex.
- Although depth-to-water levels for W20 and W26 were used in the modeling, the depths were not provided in the Feasibility Evaluation.
- Using two depth-to-ground water measurements is not sufficient to establish ground water flow direction or hydraulic gradient.
- No static water levels for the primary Freeman School District supply well are presented.

CHS implied that the ground water flow direction used for the Freeman School District campus may have the same issues because it is assumed to be based on the modeling discussed above.

Response: The HRS documentation record at proposal supports that the ground water flow direction in the general area of the Site is from the northeast to the southwest (from the grain facility to the contaminated wells). Although the commenter correctly noted that ground water flow direction specific to the immediate vicinity of the Site is not established using site-specific data, this does not impact the Site score. The lack of site-specific ground water flow direction data does not impact the Site score because soil Source 1 (contaminated soil) is the only known source of carbon tetrachloride and chloroform in the vicinity of the observed release wells.

As discussed in section 3.7, Observed Release: Attribution, of this support document, the HRS requires that some portion of the significant increase be attributable to the site (see HRS sections 3.1.1, *Observed release*, and 2.3, *Likelihood of release*). The HRS is silent on the use of ground water flow direction to establish attribution. Although this information may be used to help establish attribution, it is not required. To establish attribution, EPA conducts a site-specific analysis at each site to determine attribution of the significant increase in hazardous substances to the site. This analysis generally has two steps: first, determine whether the hazardous substances in the release are associated with the sources at the site; second, investigate other possible sources to determine if the significant increase is due to a source in the area of the site.

As discussed in detail in section 3.7, Observed Release: Attribution, of this support document, EPA has established that a portion of the significant increase is attributable to the soil source at the Site. As documented in the HRS documentation record at proposal, based on information provided on pages 35–38 of the HRS documentation record at proposal, and as further supported by section 3.7, Observed Release: Attribution, of this support document, and its subsections, at least some portion of the significant increase of carbon tetrachloride and chloroform in the observed release wells at the Freeman School Complex is attributable to the soil source of carbon tetrachloride located at the grain facility property.

The HRS documentation record at proposal properly establishes attribution for HRS purposes, because it associates carbon tetrachloride in the release with the site source and demonstrates a lack of plausible off-site sources. The only known source of carbon tetrachloride at the Site area is the soil source documented in the HRS documentation record at proposal. Ground water flow direction is not required to attribute the release to the known source for HRS scoring purposes.

Regarding Mr. Pettibone's statement that ground water flow models are only as accurate as the data used to construct them, EPA agrees. EPA also agrees with CHS's comments stating that water levels for the primary Freeman School District supply well are not presented, that using two depth-to-ground water measurements does not definitively establish ground water flow direction, and that depths-to-ground water for wells W20 and W26 were not provided in the Feasibility Evaluation (Reference 12 to the HRS documentation record at proposal). However, the general information on the regional ground water flow direction in the HRS documentation package at proposal does support that the water flow direction in the Site area does generally flow from the northeast to the southwest—from the grain facility to the contaminated wells. Two additional references state that the generalized ground water flow pattern at or near the Site is southwest. Reference 24, *The Hydrogeological Framework and Geochemistry of the Columbia Plateau Aquifer System*, Washington, Oregon, and Idaho, specifically states that the generalized ground water flow pattern in the Columbia Plateau aquifer system, the system in the region around the Site and underlying the Site, is from the northeast to the southwest. Reference 36, *Underground Storage Tank Site Assessment/Site Characterization, Removal of Petroleum Contaminated Soil (PSC) & Drilling of One Monitoring Well, Freeman High School, Freeman, Washington*, states that the area's general drainage is southerly. Although these references do not guarantee that other geological features are not affecting ground water flow direction at the Site, they do bolster the reliability of the MODFLOW simulation model results that indicate that ground water flow direction is from the northeast to the southwest.

Even if the MODFLOW model ground flow direction determination were inaccurate, as is suggested by Mr. Pettibone, this does not impact scoring of the Site because the primary use of such information in this HRS evaluation would be to assist in determining the source of ground water contamination. For this Site, Source 1 contaminated soil is the only known source of carbon tetrachloride and chloroform in the vicinity of the observed release wells. The lack of other known sources, the proximity of soil Source 1 to the observed release wells, and regional ground flow direction strongly indicates that the contamination in the aquifer is attributable to soil Source 1. Thus, the lack of site specific ground water flow information does not impact the HRS evaluation.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.8 Site Inspection Validity

Comment: Mr. Pettibone submitted several comments that question the validity of the SI report and whether the data it presents are sufficient to support listing the Site on the NPL. Mr. Pettibone asserted that the SI report contains conjecture and should not be included in a public document. Mr. Pettibone commented that due to the conjecture within the SI report, this document should not be used to support the listing of the Site on the NPL. Mr. Pettibone also questioned the measures implemented for the SI sampling of the Freeman School District well including:

- Questioning whether monthly sampling was conducted;
- Questioning whether analysis was performed to include a trending graph of results.

Response: The SI report is appropriate for use in support of the HRS evaluation, and sampling and field activities were appropriately completed and the resulting data are adequate for HRS purposes to support the HRS evaluation of the Grain Handling Facility at Freeman site. None of Mr. Pettibone's comments discussed above identify any specific error in scoring or establish any specific deficiency in the data used to support the Site score.

As is discussed in several sections of this support document⁶, EPA has reviewed the SI report in light of Mr. Pettibone's comments and has found that the approach EPA used to evaluate the Site meets all HRS data quality and assurance requirements, and establishes that the release of carbon tetrachloride is associated with the grain facility Site source. Additionally, it is important to note that EPA did not rely solely on the SI report to support the Site score; rather, it relied on over 43 additional sources of information, which are cited throughout the HRS documentation record at proposal, to calculate the Site score⁷.

Although the SI report did not include data for monthly sampling events⁸ or a trending graph of data results, the SI report did provide site evaluation data of known and documented quality that meet HRS requirements to support the HRS evaluation. Pages 30, 31 and 81 of the SI report indicate that one ground water sample was collected from the Freeman School District Well as a part of the SI. Monthly sampling of ground water from a particular well is not a requirement of the HRS evaluation. Similarly, the HRS does not require multiple rounds of sampling, rather, as outlined in HRS Section 3.1.1, *Observed release*, it requires documentation that a release of hazardous substance has occurred. HRS Section 3.1.1 only requires to, "[e]stablish an observed release to an aquifer by demonstrating that the site has released a hazardous substance to the aquifer." (emphasis added). Establishing an observed release is discussed in more detail in section, 3.7 Observed Release: Attribution, of this support document. As discussed in section 3.7, the data presented in the SI report are of known and documented quality and were used in accordance with the HRS to score the Site. The Site score indicates that the Site may be listed to the NPL.

This comment results in no change to the HRS score and no change in the decision to list the Site on the NPL.

4. Conclusion

The HRS score for the Grain Handling Facility at Freeman site at proposal was 50.00. Based on the above responses to public comments, the HRS Site score at promulgation remains 50.00. The final scores for the Grain Handling Facility at Freeman site are:

Ground Water:	100.00
Surface Water:	NS
Soil Exposure:	NS
Air Pathway:	NS
HRS Score:	50.00

⁶ Sections 3.6.2, Association of Carbon Tetrachloride with the Site Soil Source, 3.7, Observed Release: Attribution, 3.7.1, Adequacy of the SI Report to Support Association of Site Contamination with Grain Handling Facility, 3.7.2, Attributing the Significant Increase in Carbon Tetrachloride in the Aquifer to the Soil Source, 3.7.4, Presence of an Illegal Dump, and 3.7.5, Adequacy of Investigation into Alternate Sources.

⁷ Additional sources of information include, but are not limited to, the Washington State Department of Ecology Report, *Freeman School Wells, Contaminated Ground Water Status Report*, and the *Feasibility Evaluation, Production Well Evaluation – Carbon Tetrachloride Contamination, Freeman School District, Freeman, Washington*.

⁸ See SI, pp. 30–31, SI Table 7-2, p. 81.

**Attachment 1: Ecology and Environment, Inc. Quality Management
Plan Superfund Technical Assessment and Response
Team IV, May 2013**

**Ecology and Environment, Inc.
Quality Management Plan
Superfund Technical
Assessment and Response
Team IV**


May 2013

**Ecology and Environment, Inc.
Quality Management Plan
Superfund Technical
Assessment and Response
Team IV**

Approval Page


May 2013

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Management and Organization

1.1 Quality Assurance Policy

1.1.1 Importance of Quality Assurance

Ecology and Environment, Inc. (E & E) considers the provision of high-quality data, technical services, and deliverables to be a priority of the company. Quality assurance (QA) awareness and continuous improvement are vital aspects of each employee's daily performance. E & E employees, through routine interactions, impart the same principles to all subcontractors. E & E supports consistent application of its principles as a means of minimizing corrective action requirements.

The Superfund Technical Assessment and Response Team (START IV) contracts are implemented in accordance with this E & E corporate policy. The START IV QA program is designed to meet the specific QA requirements of United States Environmental Protection Agency (EPA) including:

- EPA CIO 2105.0 (formerly 5360.1 A2), Policy and Program Requirements for the Mandatory Agency-wide Quality System (EPA 2000);
- EPA Requirements for Quality Management Plans (QA/R-2), EPA/240/B-01/002, Office of Environmental Information, (EPA 2001, reissued 2006);
- ANSI/ASQ E4-2004, Quality Systems for Environmental Data and Technology Programs, Requirements with Guidance for Use, American National Standard, February 2004;
- Applicable Regional QA guidance; and
- Applicable Office of Solid Waste and Emergency Response (OSWER) guidance for QA/Quality Control (QC).

1.1.2 Objectives and Goals of Quality System

The purpose of the START IV Quality Management Plan (QMP) is to control the quality of services performed by E & E under START IV contracts. The following are QA objectives and goals for all activities implemented under this START IV QMP: